



George E. Meyer

Secretary

Southeast District - Annex building

Post Office Box 12436 4041 N. Richards St. Milwaukee, Wisconsin 53212 TELEPHONE: 414-961-2727

TELEFAX #: 414-961-2770

September 20, 1994

File Ref: 3040/4489 FID#: 241149260/241174780 ERR LUST

Don Roettgers Roettgers Bulk Oil 5169 N. 37th Street Milwaukee, WI 53209

> Re: SITE CLOSURE and PECFA REIMBURSEMENT (Claim #s 53209-4603-09 and 53209-4603-10) at Roettgers' Oil Company 5169 N. 37th Street, Milwaukee, WI.

Dear Mr. Roettgers:

The Wisconsin Department of Natural Resources (WDNR) has reviewed the case files for the above referenced site. The files includes reports and letters submitted by Advent Environmental Services, Inc. The files contain information regarding the excavation and removal of several underground storage tanks from the site and the subsequent over-excavation of petroleum impacted soil.

Note: This letter addresses two separate remediations on the same property. (One remediation is for soils impacted by leaking underground petroleum storage tanks and the other is for soils impacted by a leaking waste oil tank. This is the reason for duplicate Fid #s, File reference #s and PECFA Claim #s.)

Summary

2118.99 tons of petroleum impacted soil were excavated in April 1994.

75.4 tons of waste oil impacted soil were excavated on June 21, 1994 and July 6, 1994.

Based on the information provided, we are not requiring further investigation or any other action in connection with the site at this time. Although contamination levels in excedence of WDNR Soil Cleanup Guidelines remain on site (benzene @480 ppb under sidewalk), the volume of contaminated soil does not justify placing a restriction on the deed of the property. In the event that the soils, which were found to be inaccessible by your consultant, Advent Environmental Services, Inc., become accessible in the future, the owner of the property would be responsible for managing the soils according to all applicable WDNR regulations and standards.

The WDNR signed one Form 4 for reimbursement under the State's Petroleum Environmental Cleanup Fund (PECFA) program for each of the two remedial actions. The Form 4s are signed for "Completed Remedial Action" and are enclosed. Please forward the white copies of the Form 4 and a copy of this



letter to the Wisconsin Department of Industry, Labor and Human Relations (WDILHR) with your completed claim.

In accordance with the provisions of PECFA, evidence of a hazardous substance release was reported to the WDNR on January 24, 1993 as required in s.144.76(2) Wisconsin Statutes. The activities performed at the site were not performed by the WDNR using federal LUST Trust funding (42 USC 6991). No enforcement action has been necessary at this site.

You should note that this letter does <u>not</u> constitute Department "certification" under s. 144.765 (2) (a) 3, Stats., as created by 1993 Wisconsin Act 453 (May 12, 1994). Persons who meet the definition of "purchaser" in s. 144.765 (1) (c) must receive Department pre-approval prior to conducting a site investigation in order to be eligible for the liability exemption under s. 144.765, Stats.

The WDNR appreciates the actions you have taken to restore the environment at this site. If you have any questions, you may contact me at 961-2774.

Sincerely

Andrew Boettcher Hydrogeologist

John Feeney
Hydrogeologist

c: Advent Environmental Services, Inc. SED Case File

Joan Schmaus, PECFA Program, WDILHR

enclosure: PECFA Form 4

Wisconsin Department of Industry, Labor and Human Relations Safety and Buildings Division

SBD-8069 (R. 04/91)

PECFA Claim # 53209-4603-09 FORM 4 Bureau of Petroleum Inspe

DNR SITE INVESTIGATION AND REMEDIAL ACTION PLAN REVIEW

Bureau of Petroleum Inspection and Fire Protection P.O. Box 7969 Madison, WI 53707 (608) 267-4545 (608) 267-7538 (608) 266-9420

Section 101.143 (3) (c) 4, Wis. Stats., requires that a claimant obtain written approval from the Department of Natural Resources (DNR) when requesting reimbursement for activities in response to a discharge from a commercial petroleum product storage system or home oil tank. The DNR approval must indicate that the site investigation and remedial action plan is adequate to meet requirements of s. 144.76, Wis. Stats. The DNR approval is created for the purpose of meeting the requirements of s. 101.143 (3), Wis. Stats., only and does not bar the DNR from requiring that additional investigation and/or remediation activities be performed by persons responsible under s. 144.76, Wis. Stats.

and/or remediation activities be performed by persons responsi	ible under s. 144.76, Wis. Stats.	The state of the s
DNR Use Only	> i	77 F
Any DNR / DOJ Enforcement Action(s) or DNR LUST T	rust Expenditures on this site	e? 🗆 Yes 🗆 No
If answer is yes, please provide pertinent details on a	ttached sheet.	
Claimant's Name	Remedial Action Site Name (if business)	
Roettgers Oil Company Street Address	Roettgers, Villard Remedial Action Site Address	
5169 N. 37th Street	3709 W. Villard Av	enue
City, State, Zip Code Milwaukee, WI 53209	City, State, Zip Code Milwaukee, WI 5320	9-4603-09
Claimant's Telephone Number (414) 466-0890	Telephone Number of Site	7
Claimant is		
Owner Operator Other - please spec	2	
Approval requested for: Petroleum Product Storage Sys	stem	Aboveground
FOR DNR USE ONLY (Indicate Whether Completed		
A copy of this completed document must be submitted to DNR f investigation and remediation) in accordance with s. 101.143 (3)		ergency action, site
Completed Remedial Action (complete cleanup and sing	gle claim for reimbursement) (Step	s 1 through 3)
Progress Payments For:		
☐ Emergency Action (Step 1 - check only if emergency acti	on was performed)	
☐ Completion of Site Investigation (Step 1) and Proposed F	Remedial Action Plan (Step 2)	
Remedial Action (Step 3)		Check Appropriate
 Operation/Maintenance and Environmental Monitoring remedial action activities) (Step 4) 	(annual claim for	Box(es)
Site Investigation By Order of DNR And/Or DILHR - No Re	emedial Action	
The DNR received a request for approval of the above identified following date	activities for the site listed on this	document on the
The DNR response for purposes of s. 101.143 (3), Wis. Stats., is at:	to also d	
		42 U.C. 6004 /L U.S.T.
Remedial action activities conducted by owners/operators are Funding). (See s. 101.143 (3) (a) 2., Wis. Stats.)	e not eligible for funding unde	r 42 USC 6991 (L.U.S.1.
Send one copy of this completed form to the address shown in	the upper right corner and one cop	y to the claimant.
Reviewer's Signature	Date Signed	1-94
	Date signed	1
Reviewer's Title HyoCo geologist		

Copy Distribution: White - DILHR S & B; Green - Claimant/Agent; Pink - DNR

ADVENT

ENVIRONMENTAL SERVICES, INC.

Mr. John Feeney WDNR P.O. Box 12436 Milwaukee, Wl. 53212

Re: Landfill Disposal of Contaminated Soil from Roettgers Oil -Villard Ave. Gasoline site. Advent Project Number 96804.

Dear Mr. Feeney:

Enclosed with this letter is the weight ticket summary from Parkview Landfill documenting the disposal of 2096.78 tons of petroleum impacted soil. The remediation activities that generated the soils for disposal was documented in a report submitted to you dated July 7,1994. The weight ticket summary is an addendum to that report.

If you, have any questions regarding this information, please call me at (414) 238-1874 ext.3009.

Sincerely,

Stephen G. Reuter C.P.G.

Senior Hydrogeologist

Advent Environmental Services Inc.

6100 W. EXECUTIVE DR., SUITE E MEQUON, WISCONSIN 53092 414-238-1998 FAX 414-238-1988 2220 MELBY ROAD EAU CLAIRE, WISCONSIN 54703 715-831-1530 FAX 715-831-1531

OM:

VIEW RDF DX 2105

F PARK, IL 60499-2105

INVOICE

ACCOUNT NUMBER 490496 LF 0004422

> INVOICE NUMBER 000632

DATE 05/02/94 TO:

PAGE 1 OF 3

ROETTGER'S OIL CO. 5169 N 37TH STREET MILWAUKEE WI 55209

ING INQUIRIES: 414/253-8620

SERVICE INQUIRIES: 414/253-8620

71

	ERENCE QUANTITY	DESCRIPTION	AMOUNT
04/15		PREVIOUS BALANCE	29,545.31
04/27		PAYMENT RECEIVED	29,545.31CR
04/29 365	5018	\$2.00 PER TON DISCOUNT FOR APRIL	4,237.98CR
		BALANCE FORWARD	4,237.98CR
04/15 019	181 17.65	CONTAMINATED SOIL	469.97 24.63
04/15 019	18,22	CONTAMINATED SOIL	485.14
04/15 019	189 20.51	CONTAMINATED SOIL	546.12
04/15 019	196 18.85	CONTAMINATED SOIL	501.92 _/
04/15 019	205 18.00	CONTAMINATED SOIL	479.29
04/15 019	212 19.59	CONTAMINATED SOIL	521.62
04/15 019	220 18.36	CONTAMINATED SOIL	488.87
04/15 019	223 17.03	CONTAMINATED SOIL	453.46
04/15 019	226 21.67	CONTAMINATED SOIL	577.01
04/15 019	230 18.29	CONTAMINATED SOIL	487.01
04/15 019	231 16.52	CONTAMINATED SOIL	439.88
04/15 019	21.34	CONTAMINATED SOIL	568.22
04/15 019	256 19.35	CONTAMINATED SOIL	515.23
04/15 019	275 18.93	CONTAMINATED SOIL	504.05
04/15 019	283 20.97	CONTAMINATED SOIL	558.37
04/17 019	530 18.98	CONTAMINATED SOIL	505.38
04/17 019	535 21.96	CONTAMINATED SOIL	584.73
04/17 019	542 18.03	CONTAMINATED SOIL	480.08
04/17 019	544 24.09	CONTAMINATED SOIL	641.44
04/17 019	552 17.86	CONTAMINATED SOIL	475.56
04/17 019	568 17.55	CONTAMINATED SOIL	467.30
04/17 019	572 21.59	CONTAMINATED SOIL	574.88
04/17 019	577 20.43	CONTAMINATED SOIL	543.99
04/17 019		CONTAMINATED SOIL	530.14
04/17 019	610 20.60	CONTAMINATED SOIL	548.52

48620

85.38 Y

INVOICE

ACCOUNT NUMBER 490496 LF 0004422 то;

PAGE 2 OF 3

INVOICE NUMBER

ROETTOER'S OIL CO.

INVOICE

VIEW ROP

OX 2105

OND PARK: 11 60499-2105

ACCOUNT NUMBER 490496 LF 0004422

> INVOICE NUMBER 000564

DATE 04/15/94 TO:

PAGE 2 OF 3

ROETTGER'S DIL CD. 5169 N 37TH STREET MILNAUKEE WI 53209

SERVICE INQUIRIES: 414/253-8620

11

ING INQUIRIES: 4	14/253-8620	EKAICE TUMOTETES: 414/522-8650
DATE REFERENCE NUMBER	QUANTITY DESCRIPTION	AMOUNT
04/14 018807	17.85 CONTAMINATED SOIL	475.29 ,
04/14 018810	16.91 CONTAMINATED SOIL	450.26 —
04/14 018815	16.65 CONTAMINATED SOIL	443.34
04/14 018816	17.81 CONTAMINATED SOIL	474.23
04/14 018827	19.23 CONTAMINATED SOIL	512.04
04/14 018852	18.48 CONTAMINATED SOIL	492.07
04/14 018833	17.08 CONTAMINATED SOIL	454.79
04/14 018839	22.93 CONTAMINATED SOIL	610.56
04/14 018844	16.76 CONTAMINATED SOIL	446.27
04/14 018847	19.04 CONTAMINATED SOIL	506.98
04/14 018851	20.05 CONTAMINATED SOIL	533.87
04/14 018856	17.52 CONTAMINATED SOIL	466.51 —
04/14 018859	19.32 CONTAMINATED SOIL	514.43
04/14 0188/2	23.51 CONTAMINATED SOIL	626.00
U4/14 01888Z	15.52 CONTAMINATED SOIL	413,25
04/14 018891	21.23 CONTAMINATED SOIL	565.29
04/14 018897	20.13 CONTAMINATED SOIL	536.00
04/14 018900	21.05 CONTAMINATED SOIL	560.50
04/14 018904	18,43 CONTAMINATED SOIL	490.74
04/14 018917	21.10 CONTAMINATED SOIL	561.83
04/14 018918	19.70 CONTAMINATED SOIL	524.55
04/14 018924	18.45 CONTAMINATED SOIL	491.27
04/14 018931	19.47 CONTAMINATED SOIL	518.43
04/14 018932	19.74 CONTAMINATED SOIL	525.62
04/14 018940	16.04 CONTAMINATED SOIL	427.10
04/14 018943	24.39 CONTAMINATED SOIL	649.43
04/14 018950	18.11 CONTAMINATED SOIL	482.21
04/14 018958	21.84 CONTAMINATED SOIL	581.53
04/14 018967	21.36 CONTAMINATED SOIL	568.75
04/14 018984	19.49 CONTAMINATED SOIL	518.96

PLEASE RETURN THIS PORTION WITH PAYMENT

579,19

INVOICE DATE: CURRENT CHARGES: TOTAL DUE:

ACCOUNT NUMBER	AMOUNT PAID
IMVOICE NUMBER	CHECK NUMBER

26.63

579.19 523.38 486.20

508.01

2,096.78

* PLEASE RETURN REMITTANCE ON PAGE 1

\$52,187.38 = 24.89/tm

Per

FROM:

1 MOX 2185 BEORD PARK, IL 60499-2105 INVOICE

ACCOUNT NUMBER 490496 LF 0004422

INVOICE NUMBER 000564

> DATE 04/15/94

TO:

PAGE 1 OF 3

ROETTGER'S OIL CO. 5169 N 37TH STREET MILMAUKEE WI 53209

(42105 INQUIRIES: 414/255-8620

::: SERVICE INQUIRIES: 414/253-8620

1

	DATE	refehence Number	QUANTITY	DESCRIPTI	ОИ	AMOUNT
700				PREVIOUS BAL	ANCE	0.00
		018586		CON1 AMINATED		599.64
	04/13	018597	12.85	CONTAMINATED	SOIL	342.16
	04/13	018602	13.75	CONTAMINATED	SOIL	366.12
	04/13	018605	15.10	CONTAMINATED	SOIL	402.07
	04/13	018606	18.95	CONTAMINATED	SOIL	504.58
	04/13	018611	13.80	CONTAMINATED	SOIL	367.45
	04/13	018615	21.09	CONTAMINATED	SOTL	561.56
	04/13	018626	14.05	CONTAMINATED	SOIL	374.11
	04/13	018639	16.54	CONTAMINATED	SOIL	440.41
	04/13	018644	15.81	CONTAMINATED	SOIL	420.97
	04/13	018647	17.33	CONTAMINATED	SOIL	461.45
	04/13	018653	16.82	CONTAMINATED	SOIL	447.87
•	04/13	018659	21.92	CONTAMINATED	SOIL	583.66
	04/13	018670	15.69	CONTAMINATED	SOIL	417.78
	04/13	018676	16.00	CONTAMINATED	SOIL	426.03
	04/13	018683	19.47	CONTAMINATED	SOIL	518.43
	04/13	018690	18.48	CONTAMINATED	SOIL	492.07
	04/15	018693	21.42	CONTAMINATED	SOIL	570.35
	04/13	018698	23.73	CONTAMINATED	SOIL	631.86
	04/13	018713	18.11	CONTAMINATED	SOIL	482.21 ~
	04/13	018718	16.10	CONTAMINATED	SOIL	428.69
	04/13	018724	18.16	CONTAMINATED	SOIL	483.55
	04/13	018726	20.93	CONTAMINATED	SOIL	557.30
	04/13	018732	22.49	CONTAMINATED	SOIL	598.84-
	04/13	018736	22.32	CONTAMINATED	SOIL :	594.31
	04/14	018796	20.89	CONTAMINATED	SOIL	556.24
	04/14	018803	17.40	CONTAMINATED	SOIL	463.31
	04/14	018805	16.02	CONTAMINATED	SOIL	426.56

508.01

700.74

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INVOICE ACCOUNT NUMBER 490496 LF 0004422

> INVOICE NUMBER 000632

> > DATE 05/02/94

PAGE 2 OF 3

ROETIGER'S OIL CO. SIAN N 37TH STREET MILWAUKEE WI 53209

ENG: INQUIRIES: 416/253-8620 SERVICE INQUIRIES: 414/253-8620

IG THEOTITION 43	TOTAL DOZ		SERVICE ENGUINZES! TITY ESS OUES
DATE REFERENCE NUMBER	QUANTITY	DESCRIPTION	AMOUNT
04/17 019620	17.96	CONTAMINATED SOIL	478.22
04/17 019628		CONTAMINATED SOIL	502.19
04/1/ 019635	18.71	CONTAMINATED SOIL	498.19
04/17 019653	19.66	CONTAMINATED SOIL	523.49
04/17 019673	20.06	CONTAMINATED SOIL	534.14
04/17 019678	17.17	CONTAMINATED SOIL	457.19
04/17 019681	20.36	CONTAMINATED SOIL	542.13
04/17 019684	18.00	CONTAMINATED SOIL	479.29
04/17 019689	16.92	CONTAMINATED SOIL	450.53
04/17 019706	20.46	CONTAMINATED SOIL	544.79
04/17 019720	17.89	CONTAMINATED SOIL	476.36 -
04/17 019726	17.41	CONTAMINATED SOIL	463.58 -
04/17 019731	18.73	CONTAMINATED SOIL	498.72
04/17 019741	17.66	CONTAMINATED SOIL	470.23
04/17 019761	19.69	CONTAMINATED SOIL	524.29
04/17 019767	17.91	CONTAMINATED SOIL	476.89
04/17 019780	19.17	CONTAMINATED SOIL	510.49
04/17 019784		CONTAMINATED SOIL	492.07
04/17 019793		CONTAMINATED SOIL	465.97
04/17 019806		CONTAMINATED SOIL	429.76
04/19 019894		CONTAMINATED SOIL	589.79
04/19 019910		CONTAMINATED SOIL	506.18
04/19 019911		CONTAMINATED SOIL	606.30
04/19 019918		CONTAMINATED SOIL	541.06
04/19 019921		CONTAMINATED SOIL	621.47
04/19 019926		CONTAMINATED SOIL	506.71
04/20 020275		CONTAMINATED SOIL	84.67
04/20 020306		CONTAMINATED SOIL	70.83
04/20 020323		CONTAMINATED SOIL	514.43
04/20 020333	2.59	CONTAMINATED SOIL	68.96

PLEASE RETURN THIS PORTION WITH PAYMENT

523.38

523.11

INVOICE DATE: **CURRENT CHARGES:** TOTAL DUE:

ACCOUNT NUMBER INVOICE NUMBER ... CHECK NUMBER Weiss Berzowski Brady & Donahue

ATTORNEYS AT LAW

Robert M. Weiss Michael M. Berzowski John P. Brady John E. Donahue Scott B. Fleming Sherwin C. Peltin Randy S. Nelson F. Patrick Matthews Thomas L. Skalmoski Amy R. Seibel Debra A. Slater David J. Roettgers John A. Sikora Alan Marcuvitz Michael A. Gral Melanie N. Aska Andrea Roschke Philip J. Miller Michael L. O'Shaughnessy Elizabeth A. Hardacre Barry R. White Gregory I. Devorkin Michael G. Goller

August 2, 1994

Mr. Chip Krohn
Wisconsin Department of
Natural Resources
2300 North Martin Luther King Drive
P.O Box 12436
Milwaukee, WI 53212

Re: Clean-Up located at 3709 West Villard Avenue - Milwaukee, WI

Dear Mr. Krohn:

This firm represents Roettgers Oil, Inc. with respect to the above site. Environmental reports and analysis have been filed with John Feeney of your office concerning this site. We are awaiting the approval of the site closure and a "no action letter." We have been told that it will take approximately two months to have this matter reviewed and for the issuance of a "no action letter."

Unfortunately, the "no action letter" is delaying a closing on the sale of the property. This property is located in an economically depressed area. As soon as the sale is completed, the buyer will begin upgrading the facility in hopes of quickly reopening the location, thereby helping the revival of this local community. As a result, we respectfully request that the property be reviewed as soon as possible in order to expedite the sale and begin the improvement of this inner city property.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

David J. Roettgers

DJR/dln

cc: Mr. Don A. Roettgers

700 North Water Street Milwaukee, Wisconsin 53202-4273 Telephone (414) 276-5800 Facsimile (414) 276-0458

ADVENT

ENVIRONMENTAL SERVICES, INC.

May 24, 1994

Roettgers Oil Co. 5169 N. 37th Street Milwaukee, WI 53209

Dear Mr. Roettgers:

I have enclosed the environmental remediation report for the Roettgers, Villard site, 3709 W. Villard Avenue, Milwaukėe, Wisconsin. Advent recommends that the WDNR close the site. We will forward a copy of this report and the Petroleum Environmental Cleanup Fund Act (PECFA) Form 4 to the WDNR at the following address:

Mr. John Feeney WDNR-Milwaukee Area Headquarters P.O. Box 12436 Milwaukee, WI 53212

Advent will also include one copy of this report with the appropriate documentation when requesting reimbursement from PECFA for remedial activities.

Please call me at 238-1874 ext. 3018 if I can be of further service to you.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Chris Kern, C.P.G. Hydrogeologist

cak:jad

enclosure

Environmental Remediation

Roettgers, Villard

3709 W. Villard Avenue, Milwaukee, Wisconsin

Prepared for Roettgers Oil Company

May 1994

ADVENT

Environmental Services, Inc. 6100 W. Executive Drive, Suite E Mequon, Wisconsin 53092 Advent Project No. 96804

Environmental Remediation

Roettgers, Villard

3709 W. Villard Avenue, Milwaukee, Wisconsin

Prepared By:

Christian A. Kern, C.P.G.

Hydrogeologist

AIPG Certificate No. 8834

Advent Environmental Services, Inc.

Reviewed By:

Stephen G. Reuter, C.P.G. Senior Hydrogeologist AIPG Certificate No. 7836

Advent Environmental Services, Inc.

Date: 4/94

Date: 4

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Executive Summary

Site Photographs

PID Calibration Documentation

С

D E

Site Remediation

	Purp	pose and Scope of Services
	Soil	Testing Methods4
	Soil	Testing Results
	Con	clusions and Recommendations
<u>Table</u>	1 2	Analytical Results - Soil Contamination Confirmation Samples
<u>Figur</u>	1 2	Site Location
<u>Appe</u>		
		Remedial Approval Documentation Field Screening Results of Excavated Soil

Standard Sampling Procedures and Chain of Custody Procedures

Laboratory Results and Chain of Custody Documentation

Executive Summary

Advent Environmental Services has completed an environmental remediation for the Roettgers, Villard site at 3709 W. Villard Avenue, Milwaukee, Milwaukee County, Wisconsin. Roettgers Oil Company contracted Advent to excavate, transport, and dispose of gasoline-contaminated soil identified during an environmental assessment completed by Advent in March 1993. This remediation was conducted in April 1994.

Advent supervised the excavation and transportation of 2,118.99 tons of petroleum-contaminated soil to the Waste Management Parkview Landfill in Menomonee Falls, Wisconsin. We successfully removed the contaminated soil that could be excavated using standard techniques. Chemical analysis of soil samples collected from the walls and floor of the excavation indicate that all soil with gasoline range organic (GRO) concentrations exceeding the Wisconsin Department of Industry, Labor and Human Relations (WDILHR) 10 parts per million (ppm) remedial action guideline has been removed from the Roettgers, Villard property. Contamined soil located under the 37th Street right-of-way was not removed. The WDNR typically does not require that contaminated soil be removed if it threatens the integrity of city streets.

Groundwater was not encountered in the excavation, which reached a depth of 13 feet. In addition, groundwater was not encountered in soil borings completed in March 1993 at the site. Maximum depth of the borings was 50 feet.

Advent recommends no additional remediation at the site because the contaminated soil that can be excavated has been removed. Groundwater quality and human health are not threatened by the remaining impacted soil.

Purpose and Scope of Services

Roettgers Oil Company contracted Advent to remediate gasoline-impacted soil at the Roettgers, Villard site located at 3709 W. Villard Avenue, Milwaukee, Wisconsin, (NE¼, SW¼, Sec. 36, T.8N, R.21E) by excavation and landfill disposal (Figure 1).

Advent conducted field work for an environmental site assessment in July 1992 and March 1993. We completed 17 soil borings to determine the extent of contamination. We had the soil samples chemically analyzed to define the extent of contaminated soil (Figure 2). Groundwater was not encountered in borings, which reached a maximum depth of 50 feet. Please refer to the environmental assessment report completed by Advent in November 1993 for further details.

Advent determined that soil excavation and landfilling was the least expensive, WDNR- and PECFA-approved remediation option. See Appendix A for approval documentation.

To remediate the site, Advent performed the following services:

- Excavation and removal of petroleum-contaminated soil
- Field screening the excavated soils
- Backfilling the excavation with suitable fill material
- Chemical analysis of soil samples to confirm successful removal of impacted soil

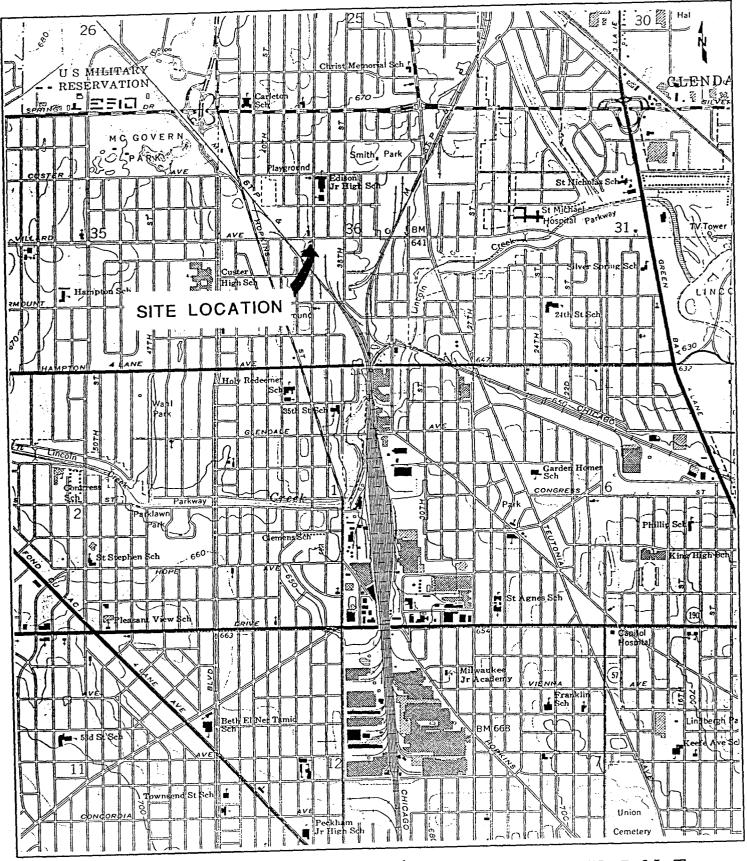


FIGURE 1 SITE LOCATION 37th AND VILLARD SITE MILWAUKEE, WISCONSIN



A D V E N T

ENVIRONMENTAL SERVICES, INC.

AESI # 96804

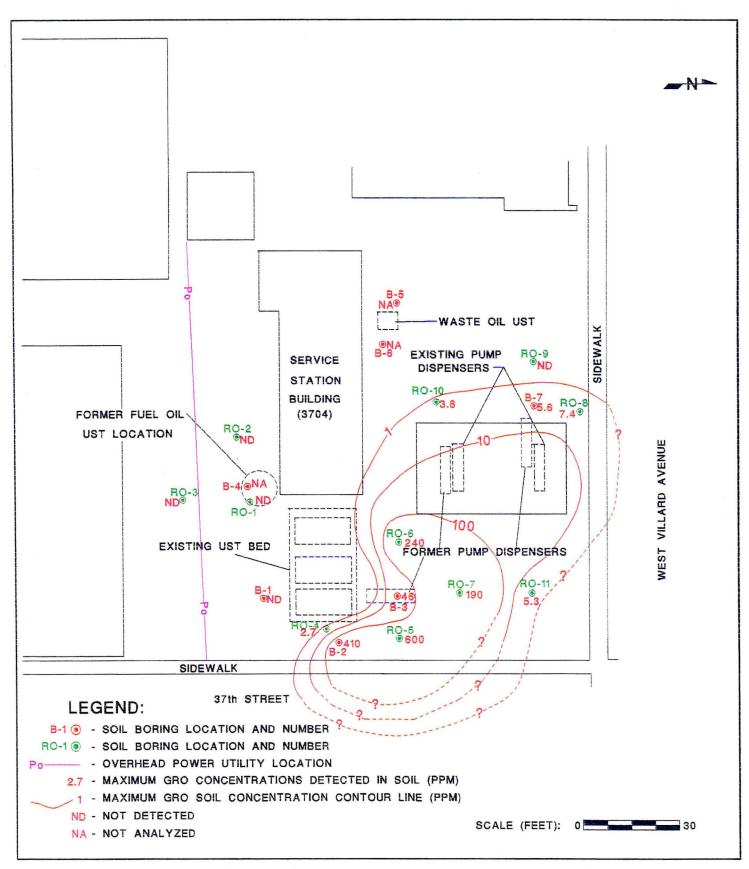


FIGURE 2 EXTENT OF GRO
CONTAMINATED SOIL (PPM)
37th AND VILLARD
MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 6/7/93 DRAWING # 96804CE

Soil Testing Methods

Soil Excavation and Field Screening Methods

Chris Kern of Advent supervised the excavation that began in the area adjacent to the existing UST bed and extended to the north and west. Excavation continued until field screening of the soil samples from the walls and floor of the excavation indicated a response of less than one ppm. The maximum final dimensions of the excavation were approximately 80 feet by 70 feet by 13 feet deep (see Figure 3).

Soil samples were field screened with a calibrated photoionization detector (PID) using the headspace method. Field screening responses of less than one ppm were used to define the excavation limits. The excavation reached a maximum depth of 13 feet before PID responses of less than one ppm were obtained.

Contaminated soil was encountered beneath the piping run from the UST bed to the pump islands. At the WDNR's request, the UST piping was removed to allow excavation of this soil. A large concrete foundation was encountered along the north side of the excavation east of the pump islands. The foundation was left in place and excavation wall samples were collected adjacent to it to document removal of impacted soil in this area.

To confirm removal of impacted soil, one soil sample was field screened for every 15 cubic yards of soil transported to the landfill. Field screening results are included in Appendix B. The soil was transported by Briohn Environmental, Inc., of Kenosha, Wisconsin, to the Parkview Landfill. Copies of the landfill manifests are included in Appendix A. Photographs of the excavation are provided in Appendix C.

Appendix D includes procedures for maintaining sample security, identification, and integrity, the procedures followed for collecting soil samples, procedures for field screening of samples, and chain of custody procedures. PID calibration documentation is included in Appendix E.

Sample Collection Methods

Advent collected 14 soil samples from the excavation walls and nine samples from the excavation floor for GRO and petroleum volatile organic compound (PVOC) analysis to confirm the removal of impacted soil. In addition, Advent collected six representative soil samples, one from each 300 cubic yards of excavated material, for GRO and PVOC analysis to confirm the disposal of contaminated soil.

Chemical Analyses of Soil Methods

Great Lakes Analytical, Buffalo Grove, Illinois, analyzed the soil samples collected at the Roettgers, Villard site for GROs and PVOCs. Analytical methods used are approved by the WDNR and are outlined in "LUST Analytical Guidance," April 1992. All GRO and PVOC results were calculated on a dry-weight basis as required by WDILHR. Each analytical method follows specific quality control (QC) criteria listed in the "LUST Quality Assurance Plan," also published in April 1992 by the WDNR. This includes the selection and calibration of appropriate instruments and the use of QC samples. Daily performance tests and the demonstration of precision and accuracy in the laboratory are required.

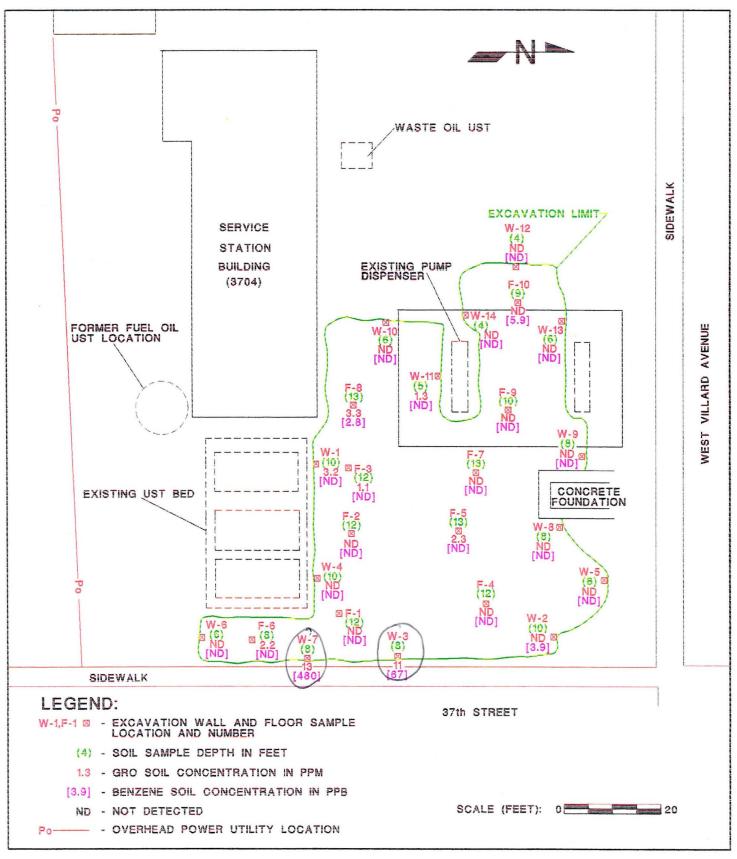


FIGURE 3 EXTENT OF EXCAVATION AND FLOOR/WALL SAMPLE RESULTS

ROETTGERS-VILLARD MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 5/11/94 DRAWING # 96804CF

Soil Testing Results

Field Screening

Field screening of contaminated soil transported to the landfill indicated concentrations of 10 to 200+ ppm (benzene equivalent instrument units). PID responses of 25 to 75 ppm were recorded along the east wall adjacent to 37th Street. This soil could not be removed due to the potential to damage the sidewalk along 37th Street.

Chemical Analyses

Six soil samples were collected to confirm excavation of contaminated material (samples E-1 to E-6). These samples contained GROs ranging from 2.5 to 400 ppm. PVOCs were also present in these samples. Benzene was detected ranging from no detect to 1,800 ppb; ethylbenzene from no detect to 6,400 ppb; and xylene from 75 to 31,000 ppb.

Fourteen samples were collected along the walls (samples W-1 to W-14) of the excavation and 10 samples from the floor (samples F-1 to F-10) to document the removal of contaminated soil. GRO detects ranged from no detect to 13 ppm. Of the PVOC compounds detected in these samples, benzene ranged from no detect to 480 ppb; ethylbenzene from no detect to 680 ppb; and xylene from no detect to 1,700 ppb. Samples with elevated concentrations were all collected along the east wall of the excavation where additional excavation of soil was prevented by the proximity of 37th Street.

Sampling locations and GRO and chemical analyses results are indicated on Figure 3. Table 1 lists results of soil samples collected to document removal of contaminated soil; Table 2 lists results of wall samples; and Table 3 lists results of floor samples. Copies of laboratory data reports and chain of custody documentation are included in Appendix F.

TABLE 1

ANALYTICAL RESULTS - SOIL CONTAMINATION CONFIRMATION SAMPLES ROETTGERS, VILLARD SITE

Sample	Case Closeout Limits	E-1	E-2	E-3	E-4	E-5	E-6	Methanol Blank	Methanol Blank
Date Collected		4/13/94	4/13/94	4/14/94	4/15/94	4/18/94	4/18/94	ND	ND
Depth (feet)									
PID		50	35	175	15	300	20		
GROs (ppm)		31	11	400	2.5	130	15	ND	ND
PVOCs (ppb)									
Benzene	5.5	850	380	ND	130	1,800	ND		
Ethylbenzene	2,900	1,200	78	ND	56	6,400	77		
Methyl-t- butyl-ether		ND	160	ND	130	ND	ND		
Toluene	1,500	ND	ND	ND	7.7	ND	ND		
1,2,4 TMB		610	250	39,000	83	14,000	150		
1,3,5 TMB		290	58	13,000	ND	3,700	130		
Total Xylenes	4,100	3,300	330	31,000	78	20,000	270		

ND Not Detected — Not Analyzed For laboratory detection limits, see Appendix F

TMB trimethylbenzene

TABLE 2

ANALYTICAL RESULTS - SOIL WALL SAMPLES ROETTGERS, VILLARD SITE

Sample	Case Closeout Limits	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11	W-12	W-13	W-14
Date Collected		4/14/94	4/14/94	4/14/94	4/14/94	4/14/94	4/14/94	4/14/94	4/15/94	4/15/94	4/18/94	4/18/94	4/19/94	4/19/94	4/19/9 4
Depth (feet)															
PID		0	0	2	0	0	0	1	0	0	0	1	0	0	1
GROs (ppm)		3.2	ND	11	ND	ND	ND	. 13	ND	ND	ND	1.3	ND	ND	ND
PVOCs (ppb)							-								
Benzene	5.5	ND	3.9	67	ND	ND	ND	480	ND						
Ethylbenzene	2,900	11	ND	260	ND	ND	ND	680	7.4	ND	ND	ND	ND	ND	ND
Methyl-t- butyl-ether		ND	ND	190	110	ND									
Toluene	1,500	8.3	6.1	ND	ND	ND	ND	ND	6.0	ND	ND	ND	ND	ND	ND
1,2,4 TMB		63	25	120	ND	ND	ND	200	31	ND	ND	23	ND	ND	ND
1,3,5 TMB		44	ND	140	ND	ND	ND	120	25	ND	ND	13	ND	ND	ND
Total Xylenes	4,100	53	ND	400	ND	ND	ND	1,700	30	ND	ND	ND	ND	ND	ND

ND Not Detected — Not Analyzed TMB trimethylbenzene For laboratory detection limits, see Appendix F

TABLE 3 ANALYTICAL RESULTS - SOIL FLOOR SAMPLES ROETTGERS, VILLARD SITE F-10 Sample Case F-1 F-2 F-3 F-4 F-5 F-6 F-7 F-8 F-9 Closeout Limits Date 4/13/94 4/14/94 4/14/94 4/14/94 4/14/94 4/14/94 4/15/94 4/18/94 4/18/94 4/19/94 Collected Depth (feet) PID 0 0 0 0 0 0 0 0 0 0 **GROs** ND ND ND ND 1.1 2.3 2.2 ND 3.3 ND (ppm) PVOCs (ppb) Benzene 5.5 ND ND ND ND ND ND ND 2.8 ND 5.9 Ethyl 2,900 ND ND ND 11 ND ND ND ND ND 16 benzene Methyl-t-ND ND ND ND ND ND ND ND ND ND butyl-ether 1,500 ND ND 6.7 ND ND ND ND 13 ND ND Toluene 33 1,2,4 TMB ND 24 ND 46 44 ND 100 ND 18 ND ND ND 23 35 ND 54 1,3,5 TMB ND 18 15 Total 4,100 ND ND 23 ND ND ND ND 64 ND 26 **Xylenes**

ND . Not Detected

— Not Analyzed

TMB

trimethylbenzene

For laboratory detection limits, see Appendix F

Conclusion and Recommendations

Conclusions

Soil

The petroleum-contaminated soil that can be excavated by standard techniques on the Roettgers, Villard property has been removed and disposed of at the Parkview Landfill. A limited volume of impacted soil remains in the 37th Street right-of-way. This limited volume of soil does not pose a significant threat to human health or the environment because:

- This impacted soil is capped by 37th Street.
- The soil is limited to shallow depths and does not pose a threat to groundwater.
- The impermeable clay soil impedes further contaminant migration.
- The contaminant source has been removed.

Groundwater

Groundwater was not encountered in the excavation, which reached a depth of 13 feet. Data collected from soil borings completed at the site suggest groundwater is at depths over 50 feet. The absence of groundwater in the excavation, the limited vertical extent of soil contamination demonstrated by laboratory analyses of floor soil samples, and the impermeable nature of the clay soil suggest that it is unlikely that groundwater has been impacted by this release.

Recommendations

Advent recommends that the WDNR close the site. Additional remediation is not warranted at this site. To the extent possible, the contaminated soil has been excavated and removed. Based on the lack of GROs or PVOCs in the soil samples collected from the excavation floor, it is unlikely that groundwater has been impacted by the gasoline release.

Appendices

APPENDIX A

Remedial Approved Documentation

ADVENT

ENVIRONMENTAL SERVICES, INC.

March 28, 1994

Ms. Peggy Slind Waste Management N96 W13475 County Line Road Menomonee Falls, WI 53051

re: Disposal of petroleum contaminated soil from the Roettgers, Villard site, 3709, W. Villard Avenue, Milwaukee, WI 53209
Advent Project No. 96804

Dear Ms. Slind:

Enclosed is the Generator's Waste Profile Sheet (MW-17741), copies of relevant chemical analyses, and chain of custodies for the above-captioned site. Advent anticipates beginning excavation on April 15, 1994. Please call me at 238-1874 ext. 3018 if you require any further information.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Chris Kern Hydrogeologist

cak:jad

enclosure



MIDWEST REGION GENERATOR'S WASTE PROFILE SHEET

				PLEAS	"	ORTTPE				7741	,ou
						Proposed	Manag	ement Facility —			
իլs form is to	be used to com	ply with the	requireme	ents of a was	ste agreement					·	
TRUCTION	IS FOR COMP	LETING TH	IS FORM	ARE ATTAC	CHED		D	ecision Expiration	Date:		
. WASTE GE	NERATOR INF	ORMATIO	V 01 0	(1	7 - 11 1 1	/// / ==/					
Generator N	lame:C	ote generati	011 Cc	9 W. Villa	d And	Milwank	02 4	2. SIC Code:			
. Generator C	itv. State:		UII). 222	1. 2. 411.4		7.111 93		5. Zip/Postal Code:	53	3209	
State ID #:_	NI ontoot: Ch	VIS Ver	n 1d	est Env	wa went o			8. Phone: (\$ / }) .			
WASTE ST	REAM INFORM	IATION (Se	e Instructi	ons)		<u> </u>		6. Phone. (**/-).	000	\(\frac{1}{2} \)	
Name of Wa	iste: Pe	tro leum	Clarie	magged So	nil na aradoure	d 64	Lavaca	trute		·····	
⊫Process Ger ⊶Amount/Uni	nerating vvaste: ts:		T leavy	2,200	ions			tanks 4. Type AX	Typ	 e В 🔲	
	dling Instruction										
											
. Incidental W	aste Types and	Amounts:									
				· · · · · · · · · · · · · · · · · · ·							
TRANSPOR	TATION INFO	RMATION					-4				
Method of Si					lge 💢 Bul	k Solid	☐ Drui	m/Box 🔲 Other_			
=Supplementa	al Shipping Info	rmation:		<u></u>						· · · · · · · · · · · · · · · · · · ·	
					· · · · · · · · · · · · · · · · · · ·						
. PHYSICAL	CHARACTERI	STICS OF V	VASTE (S	See Instruction	ons) (Omit fo	r Type B)					
Color	2. Does the			sical State @		4. Layers		5. Specific Gravity	6. F	ree Liquids:	
redium	a strong incid			d 🗆 s	1	☐ Multi-la	•		1	es 🗷 No	
brown	Ø No ☐ describe:		Liqu		owder	☐ Bi-laye		Range Z - 🔿	Volur	ne:	_%
pH:	□ > 2-4	☐ 4-7		⊠ 7-10	10- <12		12.5	□Range		□ NA	
. Flash Point:	□None	☐ <140°	-/60°C	☐ 140 ·	199°F/60 - 93	3°C ∑(≥	200°F/9	3°C ☐ Closed (Cup)	Open Cup	
CHEMICAL	COMPOSITIO	N (Omit fo	r Type B)	RANGE (MIN	l-MAX)				-		
		ing tal Soi	1	<u>95-</u>	%	2. Does t	he wast	e contain any of the	ollowin	g?	
	nave wa	sphalt	· · ·	. <u>5-</u>	%	(provid		entration if known):		*	
		· · · · · · · · · · · · · · · · · · ·		-	%		NO	or LESS THAN	or .	ACTUAL	
				<u> </u>	% %	PCBs	X	☐ < 50 ppm	-	ppm	
				·	%	Cyanides		□ < 50 ppm		UNK ppm	
	<u> </u>			· · · · · · · · · · · · · · · · · · ·	%	Sulfides		□ < 50 ppm		UNK ppm	
				- 	% %	PhenoIs		☐ < 50 ppm	-	<i>vv</i> <u>r</u> ppm	
				·	^° %						
·····			Total:	100	%	•					

The total composition must be greater than or equal to 100%. (.0001% = 1 ppm or 1 mg/l)

F. SAMPLING SOURCE (Omit for Type B) (e.g., Drum, Lagoon, Pit, Pond, Tank, Vat)
REPRESENTATIVE SAMPLE CERTIFICATION (Omit for Type B) Print Sampler's Name: 5-feve Review 2. Sample Date: 330 93 Sampler's Title: 5-feve Hydrogeologist
Bampler's Employer (if other than Generator): Advent Environing tel Services
The sampler's signature certifies that any sample submitted is representative of the waste described above pursuant to 40 CFR 261.20(c) or
Sampler's Signature Albah Albah C.A.
H. GENERATOR CERTIFICATION
signing this profile sheet, the Generator certifies:
his waste is not "Hazardous Waste" as defined by USEPA and/or state regulation.
This waste does not contain regulated radioactive materials or regulated concentrations of PCB's (Polychlorinated Biphenyls).
The waste does not contain regulated concentrations of the following pesticides and herbicides: Chlordane, Endrin, Heptachlor (and it's poxide). Lindane, Methoxychlor, Toxaphene, 2, 4-D, or 2, 4, 5-TP (Silvex).
The waste does not contain halogenated compounds such as: tetrachloroethylene, trichloroethylene, methylene chloride, 1. 1. 1-trichloroethane, carbon tetrachloride, chloroform, ortho-dichlorobenzene, dichlorodifluoromethane, 1, 1, 2-trichloro-1, 2, 1. 1-trifluoroethane, trichlorofluoromethane 1, 1-dichloroethylene, and 1, 2-dichloroethylene at greater than 1% (10,000ppm) total solvent concentration. This listing includes any combination of the above named halogenated compounds where the total concentration or the sum of the concentrations of the individual compounds exceed 1% or 10,000 ppm on a weight to weight basis.
■his sheet and the attachments contain true and accurate descriptions of the waste material. All relevant informa— ion regarding known or suspected hazards in the possession of the Generator has been disclosed.
The Generator has read and understands the Contractor's Definition of Special Waste included in Part B.5. of the attached instructions form. All types and amounts of special wastes provided in incidental amounts have been identified in section B.6. of this form.
he analytical data presented herein or attached hereto were derived from testing a representative sample taken in accordance with 40 CFR 261,20(c) or equivalent rules.
any changes occur in the character of the waste, the Generator shall notify the Contractor prior to providing the waste to the Contractor. Signature 10. Title 1
Name (Type or Print) 12. Date 3 - 3 - 9 - 4 -
NOTE: Omit sections D., E., F., and G., for Type B waste.

Comments:



201 E. Washington Avenue P.O. Box 7969 Madison, Wisconsin 53707

State of Wisconsin Department of Industry, Labor and Human Relations

March 16, 1994

CHRIS KERN
ADVENT ENVIRONMENTAL SERVICES INC
6100 W EXECUTIVE DR SUITE E
MEQUON WI 53092

RE: REMEDIAL ALTERNATIVE RESPONSE

CLAIM #53209-4603-09

ROETTGERS OIL CO, 3709 W VILLARD AVE, MILWAUKEE WI

Dear Consultant;

Thank you for contacting the department with the remediation alternatives for the above referenced site. The response is as follows.

RECOMMENDED ALTERNATIVE:

Excavation & Landfill.

APPROVED:XXX DENIED: NOT APPLICABLE: SCHEDULE AN APPOINTMENT:

APPROVED ALTERNATIVE: E

Excavation & Landfill.

MAXIMUM CONSULTANT COST:

\$ 16,025.00

ESTIMATED COMMODITY COST:

\$ 94,986.00

TOTAL COST:

\$ 111,011.00

NOTE: ILHR 47.335(3)(c)1. states, "Only alternatives which are reasonably expected to be approvable by the DNR may be included in the comparison." DILHR has approved/disapproved the consultant's recommended remedial alternative based upon the cost estimate only. The DNR may or may not approve the lowest cost remedial alternative.

Sincerely,

Eric J. Scott

Environmental Cleanup Grant Reviewer

Bureau of Petroleum Inspection and Fire Protection

Phone (608) 266-8516, FAX (608) 267-1381

cc. DAVE ROETTGERS, ROETTGERS OIL CO

FILE (2

ADVENT

ENVIRONMENTAL SERVICES, INC.

March 1, 1994

John Feeney Wisconsin Department of Natural Resources P.O. Box 12436 Milwaukee, WI 53212

re: Soil remediation at the Roettgers, Villard Avenue site, 3709 W. Villard Avenue, Milwaukee, WI Advent Project No. 96804.02

Dear John:

Advent proposes soil excavation and landfilling to remediate petroleum contaminated soils at the captioned site.

Review of Site Assessment

Advent's site assessment report (mailed to you in February 1994) defined the extent of petroleum contaminated soil at the site. Figure 1 indicates the extent of GRO contaminated soil. Contamination at concentrations sufficient to cause a PID response were typically detected to depths of 10-12 feet (Figure 2). Laboratory analysis of soil samples collected at the base of the borings (typically 21 feet) indicate GRO concentration of less than 5 ppm under the "hot spot" of the contaminated area.

Several borings were completed to investigate the presence of contamination in the former fuel oil UST location. DROs were detected in boring B-4 at a concentration of 16 ppm. All other samples collected in borings completed in this area did not contain DRO contamination at concentrations exceeding laboratory detection limits.

Groundwater was not encountered in the borings which were completed to a maximum depth of 51 feet.

Soil Remediation Proposal

Advent proposes excavating GRO contaminated soil from the site in an area indicated on Figure 3. The excavation would extend to a depth of approximately 12 feet, or to depths where field screening with a PID no longer detected VOCs. This proposed excavation would leave areas of contaminated soil on site. One area extends beneath 37th Street an unknown distance. The second area, with estimated concentrations below 100 ppm, extends beneath the pump island, UST piping run, and canopy area at the site. Remaining soil contamination at the site would be largely immobile in the clay soils at the site and would not constitute a hazard to groundwater or human health because of the depth to groundwater.

Excavation is not planned for the low level detect from the former fuel oil UST location. Lack of other detects in adjacent borings indicate that this contaminated area is of limited extent.

Advent estimates that approximately 1,400 cubic yards or 2,200 tons of contaminated soil is present in the area to be excavated. Analysis of remedial options for the PECFA program indicate this remedial option to be the lowest cost.

Please call me at (414) 238-1874 ext. 3018 if you have any further questions.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Chris A. Kern, C.P.G.

Hydrogeologist

cak:jad

cc: Mr. Don Roettgers, 5169 N. 37th Street, Milwaukee, WI 53209

Mr. Dave Roettgers c/o Weiss, Berzowski, Brady, & Donahue, 700 N. Water Street, Milwaukee, WI 53202-4273

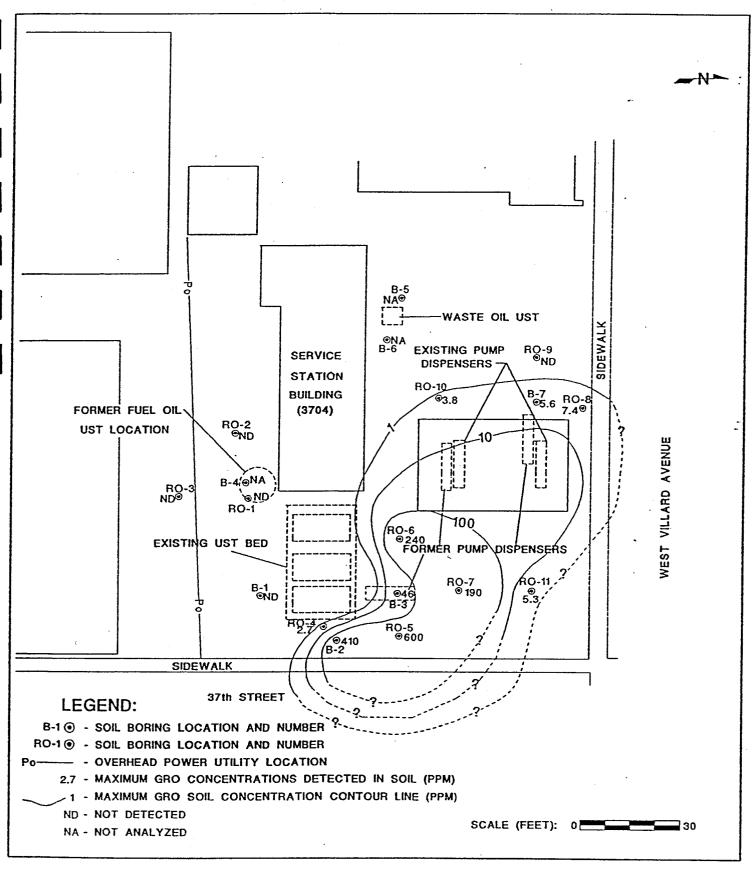


FIGURE 1 EXTENT OF GRO
CONTAMINATED SOIL (PPM)
37th AND VILLARD
MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 6/7/93 DRAWING # 96804CE

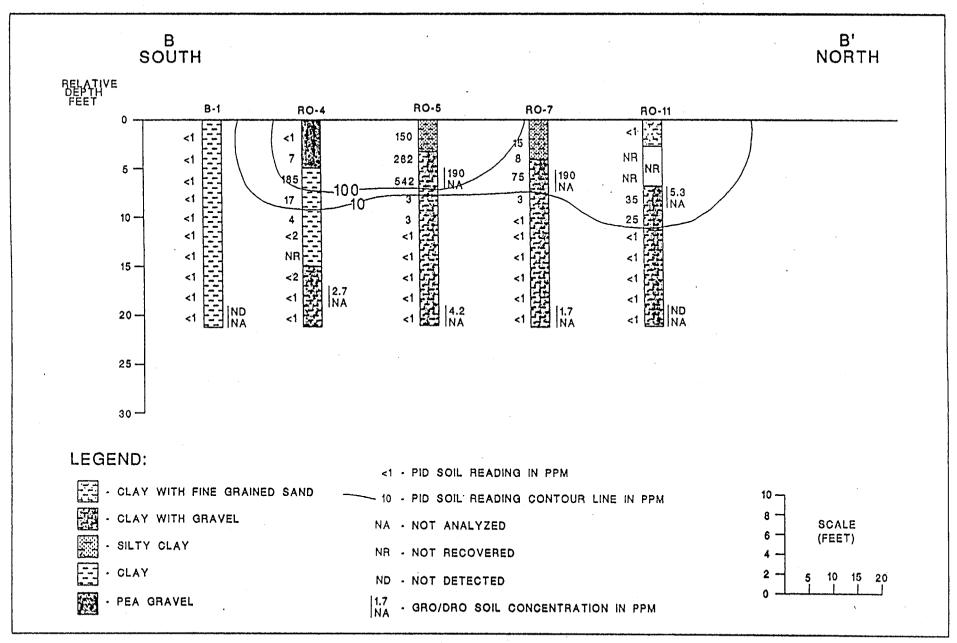


FIGURE 2 SOUTH TO NORTH PEDOLOGIC CROSS-SECTION B-B'
37th AND VILLARD
MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 6/4/9
DRAWING # 96804CD

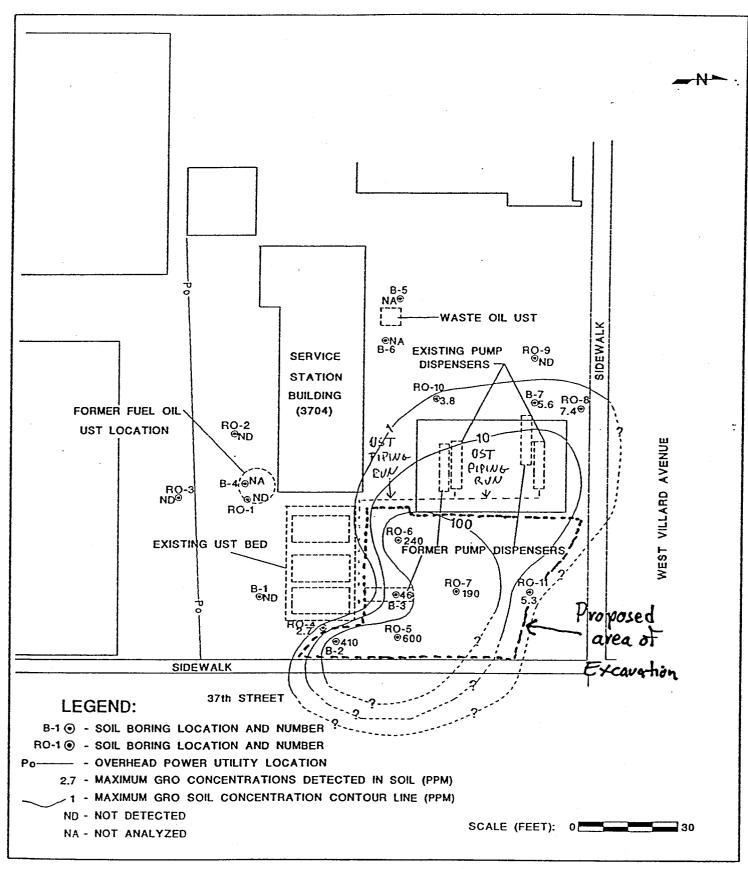


FIGURE 3 EXTENT OF GRO
CONTAMINATED SOIL (PPM)
37th AND VILLARD
MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 6/7/93 DRAWING # 96804CE

APPENDIX B

Field Screening Results of Excavated Soil

ADVENT ENVIRONMENTAL SERVICES, INC.

Job Name: Roettgers, Villand

Job#: 96804

Page / of 5

Estimated Yardage	PID readings (ppm)	Time	Date	SollType	Remarks Twoke# # 218
15	5	11:30	413		
30	2	12:40			
45	50)		#133
60	75	12:05:	4		±133 233
75	10	12:0			35
90	90	12:5			418
105	120	12:20			918 218
120	80	12:55			82
135	10	1:05			35
150	35	1:10			<i>1</i> 33
165	70	1:15			233
180	25	135			418
195	125	1:55			28
210	50	>:05			35
225	ු දැ	2:18			133
240	130	5.22			718
255	110	2:40			233 82
270	95	5:50		A	82
285	ટઇ	3:05			35
300	50	3.6			133
315	35	3.52			418
330	70	3:35			518
345	80	3:45			218 233
360	3-\$35	8:00	4/14		3/8
375	10	£:€0		· · · · · · · · · · · · · · · · · · ·	Wolfen In
390	85	5:30			318 Nollywla 23
405	40	8:35			44

E

*E-*2

grandana.

Job Name:

Poollges

Job #:

PageZof 5

				•	
Estimated Yardage	PID readings (ppm)	Time	Date	Soil Type	Remarks Twdc #
420	95	8:40	4/14	Clay	418
435	175	8:45	,		60
450	26	8:50			133
465	35	8:55			233
480	10	9:05			27
495	30	9:10		·	82
510	95	9:15			318
525	110	9.20		·	NONUMBER 23
540	105	9:30			23
555	85	9:35			44
570	60	9:45			418
585	160	9:50			Y18 133
600	- 50	10:00		·	233 82
615	<i>YO</i>	10:5		,	. 82
630	40	10:35			3/8
645	20	111:50			27
660	.95	10:55			27 No Hunsen ?
675	110	11:00		.4	7
690	30	11:05			4 x
705	35	11:15			418
720	125	11:20			60
· 735	135	11:30			133 '
750	(80	11:35			233
765	110	11: YS			82
780	20	11.35			318
795	45	12:05			27
810	45	12:15			No Nomber

E-3

Job Name:

Job#:

Page 3 of 5

Estimated	PID	Time	Date	Soil Type	Remarks	7
Yardage	readings (ppm)				Twc/c#	
825	50	12:25	4/14	Russke	7wc/c# 23	
840	70	12:40			44	3780 870
855	10	12:55			60	3480
870	120	1:15			1 7	820
885	130	10:15	4/15	day	1 5 7	2/80
900	15	10:25	,	/	35	F-Y
915	45	10:30)			218	
930	80	10'35			<u>ප</u>	
945	-70	10:40			418	66
960	190	10.50			233	- 20
975	200+	11:10			54	1200
990	% O	11:50			35	1200
1,005	60	11:30			218	J 11 -
1,020	65	11:35			23	
1,035	125	11:45			yı 8	
1,050	140	12:10			233	
1,065	35	12:30			418	
1,080	105	1:00			54	
1,095	130	1:05			233	
1,110	150	1:20		·	35	·
1,125	165	8:00	4/18		233 35 54	
1,140	35	8:10			44	
1,155	95	8:15			NONumber	
1,170	90	8.52		·	34	
1,185	105	8:35			y18	·
1,200	10	9:00			· 54 44	
4,215	45	9:10			44	P-5

ADVENT ENVIRONMENTAL SERVICES, INC.

Job Name:

Job#:

Page/ of 5

Estimated Yardage	PID readings (ppm)	Time	Date	Soil Type	Remarks	
1,230	20	9:15	4/18	(lay	# 318	
1,245	30	9:30	1 / /		H-1	
1,260	90	10:10			?	
1,275	120	10:10		play	=44	
1,290	80	16:15			#44 H-1	,
1,305	35	10:25			418	•
1,320	73	10:45			54	
1,335	13	11:10			4-1	
1,350	130	11:55			y y	18
1,365	20	12.00			54	
1,380	35	12:10			34	
1,395	60	12:20			H-1	
1,410	iδ	12:25			418	
1,425	40	1:15			5	
1,440	35	1.30			4-1	
1,455	145	1:35		_	3K	
1,470	200+				?	
1,485	160	1:50		٤	418	
1,500	140	5.50			54	<u>=-6</u>
1,515	y 0	2:35			14-1	
1,530	35	5:45			S-4	
1,545	110	2:50			×	
1,560	90	3:00			418	
1,575	10	3:05			44	
1,590	(0	3:30			H-/	
1,605	55	8:30	4/19		44	
1,620	135	2:05	7		218	

Job Name:

Job#:

Page 5 of 5

Estimated Yardage	PID readings (ppm)	Time	Date	Soil Type	Remarks
1,635	10	5:10	4/19		918 99 59
1,650	२७	9:30	4/19		44
1,665	10	9:45	4/14		54
1,680					
1,695					
1,710					
1,725			·		
1,740					
1,755					
1,770					
1,785					
1,800			<u>-</u>		
1,815					
1,830					
1,845					
1,860					
1,875					
1,890				.1	
1,905					
1,920					
1,935					
1,950					
1,965					
1,980					······································
1,995	-				
2,010					· · · · · · · · · · · · · · · · · · ·
2,025					

APPENDIX C

Site Photographs

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Roettgers, Villard (#96804) PAGE 1 OF 3

DATE:	4/18/94
TIME:	

DIRECTION OF PHOTOGRAPH:

Looking Northeast

WEATHER CONDITIONS:

Sunny

60°F

PHOTOGRAPHED BY:

Chris Kern



DESCRIPTION: Northeastern well of excavation, 37th Street to right, Villard Avenue in background.

DATE:	4/18/94

TIME:

DIRECTION OF PHOTOGRAPH:

Looking east

WEATHER CONDITIONS:

Sunny

60°F

PHOTOGRAPHED BY:

Chris Kern



DESCRIPTION: Eastern wall of excavation, 37th Street in background

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Roettgers, Villard (#96804)

PAGE 2 OF 3

DATE:	4/14/94
DALL	4/14/24

TIME:

DIRECTION OF PHOTOGRAPH:

Looking East

WEATHER CONDITIONS:

Cloudy

55°F

PHOTOGRAPHED BY:

_Chris Kern



DESCRIPTION: Excavating area north of UST bed, note cut off piping.

DATE: 4/14/94

TIME:

DIRECTION OF PHOTOGRAPH:

Looking north

WEATHER CONDITIONS:

Sunny

60°F

PHOTOGRAPHED BY:

Chris Kern



DESCRIPTION: Excavating in area of concrete Villard Avenue is in the background.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Roettgers, Villard (#96804) PAGE 3 OF 3

DATE: 4/18/94

TIME:

DIRECTION OF PHOTOGRAPH:

Looking west

WEATHER CONDITIONS:

Sunny

60°F

PHOTOGRAPHED BY:

Chris Kern



DESCRIPTION: West wall between pump islands.

DATE: 4/18/94

TIME:

DIRECTION OF PHOTOGRAPH:

Looking north

WEATHER CONDITIONS:

Sunny

60°F

PHOTOGRAPHED BY:

Chris Kern



DESCRIPTION: North wall between pump islands, cones mark location of borings completed during site investigation.

APPENDIX D

Standard Sampling Procedures and Chain of Custody Procedures

SAMPLING AND FIELD SCREENING PROCEDURES

Soil Sampling Procedures

Subsurface soil samples were collected with the bucket of the back hoe from the soil excavation. Adequate soil was collected and split into a sample for field screening and a sample for laboratory analysis, if needed. Soil collected from the back hoe bucket was taken from the inside of a mass of soil to prevent the collection of cross contaminated soil that may have come in contact with the back hoe bucket.

The following headspace methodologies were used for PID field screening of soil samples:

- The PID was calibrated at the site according to the manufacturer's specifications before commending field operations. Results of the calibration were recorded on a calibration log sheet.
- Headspace samples were collected in clean four-ounce glass jars.
- 3. The jars were filled half full and sealed with heavy gauge aluminum foil immediate after sampling.
- 4. Once the headspace samples were sealed, the samples were agitated for at least 30 seconds to break up soil clods and release vapors.
- 5. After being agitated, the samples were placed out of direct sunlight and allowed to equilibrate to approximately 70° F.
- 6. Following equilibration, the headspace samples were analyzed by inserting the tip of the PID probe through a single, small hole in the foil seal to a position half-way between the seal and sample surface. The highest instrumental reading in benzene equivalent ppm was then recorded.

Soil Samples Submitted for Laboratory Analysis

Soil samples submitted for laboratory analysis were collected as split samples from the same location as the samples for field screening. Soil samples submitted were transferred into the appropriate containers depending on the laboratory analysis needed.

ANALYTE	CONTAINER TYPE	FIELD PRESERVATIVE
GRO	2 oz. septa-cap jar	Methanol
PVOC	4 oz. TLC jar	none

TLC = teflon lined cap

Samples were then sealed and cooled to 4°C for transport to the laboratory. All collected samples were labeled with the following information:

- Site Name;
- Sample Number;
- Sample Location;
- Date and Time of Collection;
- Analysis Requested;
 - Name of Sampler; and
- Other Applicable Information (i.e., PID readings, odors)

Chain of Custody Procedures

This section describes procedures used for sample identification and chain of custody. The purpose of these procedures is to ensure security and integrity of the sample from collection through transportation, storage, and analysis.

Sample identification documents were carefully prepared so that sample identification and chain of custody were maintained and sample disposition was controlled. Sample identification documents included:

- * Field Notebooks:
- * Sample Labels; and
- Chain of Custody Records.

Each sample was labeled, chemically or physically preserved, and sealed immediately after collection. To minimize handling of sample containers, a label was filled out prior to sample collection. The sample label was completed using waterproof ink and then firmly affixed to the sample container. The sample label provided the following information:

- * Sample Number;
- * Location:
- * Date and Time of Collection;
- * Analysis Required; and
- Name of Sampler.

A chain of custody record was fully completed in triplicate by the advent sampler immediately following sample collection.

Transfer of Custody Shipment

The samples and chain of custody record were packed in a cooler. When transferring samples, the individuals relinquishing and receiving them signed, dated, and noted the time on the chain of custody record. This record documents sample custody.

Laboratory Custody Procedures

A designated sample custodian accepted custody of the shipped samples and verified that the sample identification numbers matched those on the chain of custody record. A copy of the chain of custody record was retained by the laboratory until analyses were complete. The record was then transferred to the site file with the analytical results.

APPENDIX E

PID Calibration Documentation

ENVIRONMENTAL SERVICES, INC.

PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: Roettgers, Villard DATE: 4/13/94
SITE NAME: Roettgers, 1/, lland DATE: 4/13/94 SIGNATURE: Churklen - TIME: 11:00
AMBIENT TEMPERATURE:50°
SAMPLE EQUILIBRATION TEMPERATURE: 70°
WEATHER CONDITIONS: Clady
HNU Model PI 101, Advent Environmental Services, Inc. number was calibrated with parts per million Isobutylene calibration gas which is equivalent in response to parts per million benzene at a gain setting of with a electron volt (Ev) lamp.
ERRATIC READINGS:
REPAIRS OR CLEANING:
PROCEDURE FOR DAILY CALIBRATION CHECK
A. Battery check - Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
C. Zero set - Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.

The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction

ENVIRONMENTAL SERVICES, INC.

PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: Coeffgers 1/1 lland DATE: 4/14/9x
SIGNATURE: Chus Kem - TIME: 7:5
AMBIENT TEMPERATURE:55°
SAMPLE EQUILIBRATION TEMPERATURE:
WEATHER CONDITIONS: Suny
HNU Model PI 101, Advent Environmental Services, Inc. number was calibrated with parts per million Isobutylene calibration gas which is equivalent in response to parts per million benzene at a gain setting of with a to. \(\) electron vol (Ev) lamp.
ERRATIC READINGS:
REPAIRS OR CLEANING:

PROCEDURE FOR DAILY CALIBRATION CHECK

- A. Battery check Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
- B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
- C. Zero set Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
- D. Calibration Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.

The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction Manual, Trace Gas Analyzer, HNU Model 101, December, 1985.

ENVIRONMENTAL SERVICES, INC.

PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: Coeffees, Villard DATE: 4/15/94
SIGNATURE: TIME: 7.15
AMBIENT TEMPERATURE:
SAMPLE EQUILIBRATION TEMPERATURE:
weather conditions: Clary
HNU Model PI 101, Advent Environmental Services, Inc. number was calibrated with parts per million Isobutylene calibration gas which is equivalent in response to parts per million benzene at a gain setting of with a electron volt (Ev) lamp.
ERRATIC READINGS:
REPAIRS OR CLEANING:
PROCEDURE FOR DAILY CALIBRATION CHECK
A. Battery check - Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
C. Zero set - Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.

The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction

ENVIRONMENTAL SERVICES, INC.

PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: Coeffgers, Villard DATE: 4/18/94
SIGNATURE: Clin. Cem - TIME: 7:15
AMBIENT TEMPERATURE:
SAMPLE EQUILIBRATION TEMPERATURE:
WEATHER CONDITIONS: Clear, Suny
HNU Model PI 101, Advent Environmental Services, Inc. number
ERRATIC READINGS:
REPAIRS OR CLEANING:
PROCEDURE FOR DAILY CALIBRATION CHECK
A. Battery check - Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
C. Zero set - Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.

P.O. BOX 246 PORT WASHINGTON, WISCONSIN 53074 414-284-7447

The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction

ENVIRONMENTAL SERVICES, INC.

PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: Rattgers Villar DATE: 4/19/94
SIGNATURE: TIME: 7.15
AMBIENT TEMPERATURE: 55°
SAMPLE EQUILIBRATION TEMPERATURE: 70°
WEATHER CONDITIONS:
HNU Model PI 101, Advent Environmental Services, Inc. number was calibrated with parts per million Isobutylene calibration gas which is equivalent in response to parts per million benzene at a gain setting of with a electron volt (Ev) lamp.
ERRATIC READINGS:
REPAIRS OR CLEANING:
PROCEDURE FOR DAILY CALIBRATION CHECK
A. Battery check - Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
C. Zero set - Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.
The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction

APPENDIX F

Laboratory Results and Chain of Custody Documentation



May 2, 1994

Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

Project: 96804, Roettgens, Villard

Enclosed are the results from 8 soil samples and 1 water sample received at Great Lakes Analytical on April 15, 1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4040888	Soil: E-1	4/13/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040889	Soil: F-1	4/13/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040890	Soil: E-2	4/13/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040891	Soil: F-2	4/14/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040892	Soil: W-1	4/14/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040893	Soil: F-3	4/14/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040894	Liquid, Methanol Blank	4/14/94	WDNR GRO
4040895	Soil: E-3	4/14/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4040896	Soil: F-4	4/14/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4040897	Soil: W-2	4/14/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO

This report may not be reproduced, except in full, without the written approval of the laboratory.

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

GREAT LAKES AWALYTICAL

Kevin W. Keeley Laboratory Director



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern Client Project ID: Sample Descript:

96804, Roettgens, Villard

Cail

Percent Solids by EPA 160.3

Analysis for: Percent S First Sample #: 404-0888 Sampled: Apr 13-14, 1994 Received: Apr 15, 1994

Received: Apr 15, 1994

Analyzed: Apr 20-21, 1994 Reported: May 2, 1994

LABORATORY ANALYSIS FOR:

Percent Solids by EPA 160.3

Sample Number	Sample Description	Detection Limit %	Sample Result %
404-0888	E-1	0.10	84
404-0889	F-1	0.10	82
404-0890	E-2	0.10	80
404-0891	F-2	0.10	83
404-0892	W-1	0.10	90
404-0893	F-3	0.10	87
404-0895	E-3	0.10	85
40 4-0896	F-4	0.10	81
404-0897	W-2	0.10	97

GREAT LAKES ANALYTICAL

Kevin V Keeley Laboratory Director 4040888.ADV <1>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern Client Project ID: Matrix Descript:

Analysis Method:

First Sample #:

96804, Roettgens, Villard

Soil

WDNR GRO 404-0888 Sampled: Received:

Apr 13-14, 194 Apr 15, 1994

Analyzed: Apr Reported: N

Apr 24-25, 1994 May 2, 1994

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	Low/Medium B.P. Hydrocarbons mg/kg, Dry Weight (ppm)	Chromatogram Description
404-0888	E-1	12	31	Gas range, elevated baseline early peaks
404-0889	F-1	1.2	N.D.	
404-0890	E-2	2.5	11	Gas range, elevated baseline early peaks
404-0891	F-2	1.2	N.D.	. —
404-0892	W-1	1.1	3.2	Gas range, elevated baseline early & late peaks
404-0893	F-3	1.1	1.1	Gas range, elevated baseline early peaks
404-0895	E-3	390	400	Gas range, elevated baseline early & late peaks
404-0896	F-4	1.2	N.D.	
404-0897	W-2	1.0	N.Ď.	

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance July 1993 WDNR SW 130 93 REV. Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Keviri W. Keeley Laboratory Director

4040888.ADV <2>



Advent Environmental Services 96804, Roettgens, Villard Client Project ID: Sampled: Apr 14, 1994 Matrix Descript: 6100 W. Executive, Suite E Liquid Received: Apr 15, 1994 Mequon, WI 53092 Analysis Method: **WDNR GRO** Analyzed: Apr 27, 1994 Attention: Chris Kern First Sample #: 404-0894 Reported: May 2, 1994

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit	Low/Medium B.P. Hydrocarbons	Chromatogram Description
		μg/L (ppb)	μg/L (ppb)	
404-0894	Methanol Blank	1,000	N.D.	

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance July 1993 WDNR SW 130 93 REV. Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

evir W. Keeley aboratoo Director

4040888.ADV <3>

Sample Results

290

3,300



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

135 Trimethylbenzene.....

Analyte

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, Roettgens, Villard

Soil: E-1 EPA 5030/8020 404-0888

Detection Limit

120

180

Sampled: Received: Apr 13, 1994 Apr 15, 1994

Analyzed: Reported: Apr 25, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

	μ g/kg , Dry W	eight eight	μ g/kg, Dry Weight
Benzene	24	***************************************	850
Ethyl Benzene	35565555555555555555555555555555555555	*************************	1,200
Methyl-t-Butyl Ether	600	***************************************	N.D.
Toluene	60		N.D.
124 Trimethylbenzene	120	***************************************	610

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kévin W. Keeley Laboratory Director

4040888.ADV <4>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, Roettgens, Villard Soil: F-1

EPA 5030/8020 404-0889 Sampled: Apr 13, 1994 Received: Apr 15, 1994

Analyzed: Apr 25, 1994 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry W		Sample Results $\mu g/kg$, Dry Weight
Benzene	2.4	••••••	N.D.
Ethyl Benzene	6.0	***************************************	N.D.
Methyl-t-Butyl Ether	60	***************************************	N.D.
Toluene	6.0	***************************************	N.D.
124 Trimethylbenzene	12		N.D.
135 Trimethylbenzene	12	***************************************	N.D.
Xylene	18	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Keyin W. Keeley Laboratory Director

4040888.ADV <5>

Sample Poculte



Advent Environmental Services 6100 W. Executive, Suite E Meguon, WI 53092 Attention: Chris Kern

Client Project ID: Sample Descript:

Lab Number:

96804, Roettgens, Villard

Detection Limit

Soil: E-2 Analysis Method:

EPA 5030/8020 404-0890

Sampled: Received:

Apr 13, 1994 Apr 15, 1994

Analyzed: Reported:

Apr 25, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	μg/kg , Dry Weight	μg/kg, Dry Weight
Benzene	5.0	380
Ethyl Benzene	13	78
Methyl-t-Butyl Ether	130	
Toluene	13	N.D.
124 Trimethylbenzene	25	
135 Trimethylbenzene	25	58
Xylene	38	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040888.ADV <6>



Advent Environmental Services Client Project ID: 96804, Roettgens, Villard Sampled: Apr 14, 1994 6100 W. Executive, Suite E Sample Descript: Soil: F-2 Received: Apr 15, 1994 Mequon, WI 53092 Analysis Method: EPA 5030/8020 Analyzed: Apr 25, 1994 Attention: Chris Kern Lab Number: 404-0891 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limpg/kg, Dry W		Sample Results µg/kg, Dry Weight
Benzene	2.4		N.D.
Ethyl Benzene	6.0	***************************************	N.D.
Methyl-t-Butyl Ether	60	***************************************	N.D.
Toluene	6.0	•••••	N.D.
124 Trimethylbenzene	12		24
135 Trimethylbenzene	12		18
Xylene	18 .	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W Keeley Laboratory Director

4040888.ADV <7>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

Client Project ID: Sample Descript:

Analysis Method:

Lab Number:

96804, Roettgens, Villard

Soil: W-1

EPA 5030/8020 404-0892

Sampled: Apr 14, 1994 Received: Analyzed:

Reported:

Apr 15, 1994 Apr 25, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight	Sample Results $\mu \mathrm{g/kg}$, Dry Weight
Benzene	2.2	N.D.
Ethyl Benzene	5.5	11
Methyl-t-Butyl Ether	55	N.D.
Toluene	5.5	8.3
124 Trimethylbenzene	11	63
135 Trimethylbenzene	11	44
Xylene	17	53

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

Laboratory Director

4040888.ADV <8>



Advent Environmental Services Client Project ID: 96804, Roettgens, Villard Sampled: Apr 14, 1994 6100 W. Executive, Suite E Sample Descript: Soil: F-3 Apr 15, 1994 Received: Mequon, WI 53092 Analysis Method: EPA 5030/8020 Apr 25, 1994 Analyzed: 404-0893 Attention: Chris Kern Lab Number: Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limpg/kg , Dry W		Sample Results µg/kg, Dry Weight
Benzene	2.2	•••••	N.D.
Ethyl Benzene	5.5		N.D.
Methyl-t-Butyl Ether	55	***************************************	N.D.
Toluene	5.5		., 6.7
124 Trimethylbenzene	11		., 18
135 Trimethylbenzene	11		15
Xylene	17		23

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040888.ADV <9>



Advent Environmental Services	Client Project ID:	96804, Roettgens, Villard	Sampled:	Apr 14,	1994
6100 W. Executive, Suite E	Sample Descript:	Soil: E-3	Received:	Apr 15,	1994
Mequon, Wi 53092	Analysis Method:	EPA 5030/8020	Analyzed:	Apr 25,	1994
Attention: Chris Kern	Lab Number:	404-0895	Reported:	May 2,	1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry W		Sample Results µg/kg, Dry Weight
Benzene	780	•••••	N.D.
Ethyl Benzene	2,000	***************************************	N.D.
Methyl-t-Butyl Ether	20,000		N.D.
Toluene	2,000	***************************************	N.D.
124 Trimethylhenzene	3,900		39,000
135 Trimethylbenzene	3,900		13,000
Xylene	5,900	***************************************	31,000

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040888.ADV <10>



Sampled: **Advent Environmental Services** Client Project ID: 96804, Roettgens, Villard Apr 14, 1994 6100 W. Executive, Suite E Sample Descript: Soil: F-4 Received: Apr 15, 1994 Mequon, WI 53092 Analysis Method: EPA 5030/8020 Analyzed: Apr 25, 1994 Attention: Chris Kern Lab Number: 404-0896 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry W	•••	Sample Results µg/kg, Dry Weight
Benzene	2.4	•••••	N.D.
Ethyl Benzene	6.0	***************************************	N.D.
Methyl-t-Butyl Ether	60	•	N.D.
Toluene	6.0	***************************************	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	***************************************	N.D.
Xylene	18	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANAIZZICAL

Kevin W Keeley -Laboratory Director

4040888.ADV <11>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

Client Project ID: Sample Descript:

96804, Roettgens, Villard Soil: W-2 EPA 5030/8020

Received: Analyzed:

Apr 14, 1994 Apr 15, 1994

Analysis Method: Lab Number:

404-0897

Reported:

Sampled:

Apr 25, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lin µg/kg , Dry V	nit Veight	Sample Results µg/kg, Dry Weight
Benzene	2.0	************	. 3.9
Ethyl Benzene	5.0	***************************************	N.D.
Methyl-t-Butyl Ether	50		N.D.
Toluene		******************************	. 6.1
124 Trimethylbenzene	10		. 25
135 Trimethylbenzene	10	***************************************	N.D.
Xylene	15	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYFICAL

Laboratory Director

4040888.ADV <12>



CHAIN UF CUSTODY REPORT

10.25 BUSELLEARPHILL BUFFALO GHUVE, ILLINOIS 60089-4505 (708) 808-7766 FAX (708) 808-7772

PO #: 96804 TEMPERATURE UPON RECEIPT: ON ICE Report to: Phone #: FAX #: AIR BILL NO. SAMPLE CONTROL FIELD ID, LOCATION RECEIPT: ON ICE ANALYSIS TYPE ANALYSIS TYPE ANALYSIS TYPE	数金額 M ANALY II CAL	_					
Sample S	Client: + Line +		Project:	Roetta	ons. Villand	TAT: (5 DAY	4 DAY 3 DAY 2 DAY 1 DAY < 24 Hi
PO *: 9680 4 TEMPERATURE UPON RECEPT. ON ICE REPORT TO: PRODE #: FAX #: AR BILL NO. SAMPLE SAMPLE SAMPLE SAMPLE CONTROL SAMPLE SAMPLE SAMPLE CONTROL SAMPLE SAMPLE SAMPLE CONTROL SAMPLE SAMPLE SAMPLE CONTROL SAMPLE SAMPLE CONTROL SAMPLE SAMPLE CONTROL SAMPLE SAMPLE CONTROL SA		tra Der	Sampler:		*	DATE RESULTS	S NEEDED: 4/22/94
FIELD ID, LOCATION SAMPLE SAMPLE CONTROL CONTROL CONTROL SAMPLE SAMPLE SAMPLE CONTROL SAMPLE SAMPLE SAMPLE CONTROL SAMPLE CONTROL SAMPLE CONTROL			PO #:	- '	•	l l	• • •
	Report to: Clivis K	lgn,	Phone #:		FAX #:	AIR BILL NO.	
	FIELD ID, LOCATION		SAMPLE /	A SOUTH SOUT	ANA	ALYSIS TYPE	CONTROL /
F-1	√				10>5	70	
1	I F-I	- Y 13 2:50	5011		GRO PVO	C P10-0	4040889
	E-2	- Y/13 3.25	'(16 //	Pip = 35	4040890
1	<u> </u>	4/14 5:00	14		11 11	PID=0	4040891
1	J W-1	- Y/1× 9:30	/1		I I	P10=0	4040892
	3	Y/14 9:35	11		10 11	P10=0	
I I I I I I I I I I	Moth Blank	11 7.40			GRO		1 1 1 3
ELINQUISHED FLINQUISHED FLINQ	E-3	4/14 10:45	5.1		GRU PUUC	P10=175	4040895
ELINOUISHED 7/15 DATE RECEIVED 4/15/94PATE RELINOUISHED DATE RECEIVED DATE TIME TIME TIME DATE RECEIVED DATE RECEIVED DATE TIME TIME TIME TIME TIME TIME TIME TI	FX	- Y/K 11:15	10 L		1, 11	P10=0	4040896
Chirchan 3.10 TIME KOLIN KNOLL 15:10 TIME ELINQUISHED DATE RECEIVED DATE RELINQUISHED DATE RECEIVED DATE TIME) W-2	4/14/1/30]],		11 /1	PID=0	4040897
OMMENTS: 6 PO BOTH & RECEIRED WINDER - ST	Chizkon 3.10 TIME DATE	Kowin Kn RECEIVED	/XI '	DATE RE		TIME DATE RECEIVE	TIME DATE
			~ WEDH			IIME	



May 2, 1994

Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

Project: 96804, Roetthens, Villard

Enclosed are the results from 11 soil samples received at Great Lakes Analytical on April 15, 1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
40408 98	Soil: W-3	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040899	Soil: F-5	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040900	Soil: W-4	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040901	Soil: W-5	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040902	Soil: F-6	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040903	Soil: W-6	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040904	Soil: W-7	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040905	Soil: E-4	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040906	Soil: F-7	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4040907	Soil: W-8	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO
4040908	Soil: W-9	4/14/94	PVOC's, EPA 5030/8020 Percent Solids By EPA 160.3 WDNR GRO

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Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

GREAT LAKES ANALYTICAL

Kevin W. Keeley

Laboratory Director



Advent Environmental Services 6100 W. Executive, Suite E

Attention: Chris Kern

Client Project ID:

96804, Roetthens, Villard

Apr 14-15, 1994 Sampled: Received: Apr 15, 1994

Mequon, WI 53092

Sample Descript: Analysis for:

Percent Solids By EPA 160.3

First Sample #: 404-0898 Analyzed: Apr 21-22, 1994 Reported: May 2, 1994

LABORATORY ANALYSIS FOR:

Percent Solids By EPA 160.3

Sample Number	Sample Description	Detection Limit %	Sample Result %
404-0898	W-3	0.10	81
404-0899	F-5	0.10	81
404-0900	W-4	0.10	83
404-0901	W-5	0.10	79
404-0902	F-6	0.10	86
40 4-0903	W-6	0.10	85
40 4-0904	W-7	0.10	80
404-0905	E-4	0.10	83
404-0906	F-7	0.10	81
404-0907	W-8	0.10	82
404-0908	W-9	0.10	82

GREAT LAKES ANALYTICAL

Yevin W Keeley Laboratory Director

4040898.ADV <1>



Client Project ID: Matrix Descript:

96804, Roetthens, Villard

Soil

Analysis Method: **WDNR GRO** First Sample #: 404-0898

Sampled: Apr 14-15, 1994 Received: Analyzed:

Apr 15, 1994 Apr 27, 1994

Reported: May 2, 1994

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	Low/Medium B.P. Hydrocarbons mg/kg, Dry Weight (ppm)	Chromatogram Description
404-0898	W-3	3.5	11	Gas range pattern, elevated baseline early & late peaks
404-0899	F-5	1.2	2.3	Gas range, elevated baseline early & late peaks
404-0900	W-4	1.2	N.D.	
404-0901	W-5	1.3	N.D.	<u></u>
404-0902	F-6	1.2	2.2	Gas range, elevated baseline early & late peaks
404-0903	W-6	1.2	N.D.	
404-0904	W-7	1.2	13	Gas range, early and late peaks
404-0905	E-4	1.2	2.5	Gas range pattern, elevated baseline early & late peaks
404-0906	F-7	1.2	N.D.	.
404-0907	W-8	1.2	N.D.	

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance July 1993 WDNR SW 130 93 REV. Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES A

W∡Køéley Laboratory Director 4040898.ADV <2>



Advent Environmental Services Client Project ID: 96804, Roetthens, Villard Sampled: 6100 W. Executive, Suite E Matrix Descript: Soil Received: Mequon, WI 53092 Analysis Method: WDNR GRO Analyzed: Attention: Chris Kern First Sample #: 404-0908 Reported:

Sampled: Apr 14-15, 1994 Received: Apr 15, 1994 Analyzed: Apr 27, 1994 Reported: May 2, 1994

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	Low/Medium B.P. Hydrocarbons mg/kg, Dry Weight (ppm)	Chromatogram Description
404-0908	W-9	1.2	N.D.	•

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance July 1993 WDNR SW 130 93 REV. Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040898.ADV <3>



Client Project ID: Sample Descript:

Lab Number:

96804, Roetthens, Villard

Soil: W-3 Analysis Method:

EPA 5030/8020 404-0898

Sampled: Received: Apr 14, 1994 Apr 15, 1994

Analyzed: Reported:

Apr 27, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μ g/kg , Dry Weight	Sample Results µg/kg, Dry Weight
Benzene	7.0	
Ethyl Benzene	18	260
Methyl-t-Butyl Ether	180	190
Toluene	18	N.D.
124 Trimethylbenzene	35	120
135 Trimethylbenzene	35	140
Xylene	53	400

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors regulred additional sample dilution, detection limits for this sample have been raised.

evio W. Keeley aboratory Director

4040898.ADV <4>



Advent Environmental Services 96804, Roetthens, Villard Client Project ID: Sampled: Apr 14, 1994 Sample Descript: 6100 W. Executive, Suite E Soil: F-5 Received: Apr 15, 1994 Mequon, Wi 53092 Analysis Method: EPA 5030/8020 Analyzed: Apr 27, 1994 Attention: Chris Kern Lab Number: 404-0899 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight		Sample Results µg/kg, Dry Weight	
Benzene	2.4	•••••	N.D.	
Ethyl Benzene	6.0	***************************************	N.D.	
Methyl-t-Butyl Ether	60	*******************************	N.D.	
Toluene	6.0		N.D.	
124 Trimethylbenzene	12		46	
135 Trimethylbenzene	12		23	
Xylene	18		N.D.	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040898.ADV <5>



Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, Roetthens, Villard Soil: W-4

EPA 5030/8020 404-0900 Sampled: Ap

Apr 14, 1994 Apr 15, 1994

Analyzed: Apr 27, 1994 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight	Sample Results μ g/kg, Dry Weight
Benzene	2.4	
Ethyl Benzene	6.0	N.D.
Methyl-t-Butyl Ether	60	110
Toluene	60	N.D.
124 Trimethylbenzene	12	N.D.
135 Trimethylbenzene	12	N.D.
Xylene	18	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040898.ADV <6>



Advent Environmental Services 96804, Roetthens, Villard Client Project ID: Sampled: Apr 14, 1994 Sample Descript: Apr 15, 1994 Soil: W-5 Received: 6100 W. Executive. Suite E Analysis Method: EPA 5030/8020 Analyzed: Apr 27, 1994 Mequon, WI 53092 Attention: Chris Kern Lab Number: 404-0901 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit µg/kg , Dry We	Sample Results µg/kg, Dry Weight	
Benzene	2.6	***************************************	N.D.
Ethyl Benzene	6.5	•••••	N.D.
Methyl-t-Butyl Ether	65		N.D.
Toluene	6.5	••••	N.D.
124 Trimethylbenzene	13	•••••	N.D.
135 Trimethylbenzene	13	***************************************	N.D.
Xylene	20	•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040898.ADV <7>



Advent Environmental Services	Client Project ID:	96804, Roetthens, Villard		Apr 14,	
6100 W. Executive, Suite E	Sample Descript:	Soil: F-6	Received:	Apr 15,	1994
Mequon, WI 53092	Analysis Method:	EPA 5030/8020	Analyzed:	Apr 27,	1994
Attention: Chris Kern	Lab Number:	404-0902	Reported:	May 2,	59

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit $\mu \mathrm{g/kg}$, Dry Weight		Sample Results µg/kg, Dry Weight	
Benzene	2.4	•••••	N.D.	
Ethyl Benzene	6.0	•••••	N.D.	
Methyl-t-Butyl Ether	60		N.D.	
Toluene	6.0	•••••	N.D.	
124 Trimethylbenzene	12		44	
135 Trimethylbenzene	12		35	
Xylene	18		N.D.	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040898.ADV <8>



Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, Roetthens, Villard

Soil: W-6 EPA 5030/8020 404-0903

Apr 14, 1994 Apr 15, 1994 Sampled: Received: Analyzed:

Reported:

Apr 27, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry We	Sample Results µg/kg, Dry Weight	
Benzene	2.4	••••••	N.D.
Ethyl Benzene	6.0		N.D.
Methyl-t-Butyl Ether	60	•••••	N.D.
Toluene	6.0	•••••	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	•••••	N.D.
Xylene	18	•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

sevin W. Keeley Laboratory Director

4040898.ADV <9>



Advent Environmental Services Client Project ID: 96804, Roetthens, Villard Sampled: Apr 14, 1994 6100 W. Executive, Suite E Sample Descript: Soil: W-7 Received: Apr 15, 1994 Analysis Method: EPA 5030/8020 Analyzed: Mequon, WI 53092 Apr 27, 1994 Attention: Chris Kern Lab Number: Reported: 404-0904 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight		Sample Results μ g/kg, Dry Weight	
Benzene	24	***************************************	480	
Ethyl Benzene	60		680	
Methyl-t-Butyl Ether	600	***************************************	N.D.	
Toluene	60	•••••	N.D.	
124 Trimethylbenzene	120		., 200	
135 Trimethylbenzene	120		120	
Xylene	180		1,700	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevier W. Keeley Laboratory Director

4040898.ADV <10>



Client Project ID: Sample Descript:

Analysis Method:

Lab Number:

96804, Roetthens, Villard

Soil: E-4

EPA 5030/8020 404-0905

Sampled:

Apr 14, 1994

Received: Apr 15, 1994 Analyzed: Apr 27, 1994 Reported: May 2, 1994

78

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Xylene...... 18

Analyte	Detection Limit μg/kg , Dry Weight	Sample Results µg/kg, Dry Weight
Benzene	2.4	130
Ethyl Benzene	6.0	56
Methyl-t-Butyl Ether	60	130
Toluene	6.0	7.7
124 Trimethylbenzene	12	83
135 Trimethylbenzene	12	N.D.

Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

Laboratory Director

4040898.ADV <11>



Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, Roetthens, Villard Soil: F-7

EPA 5030/8020 404-0906 Sampled: Apr 14, 1994 Received: Apr 15, 1994 Analyzed: Apr 27, 1994

Reported:

Apr 27, 1994 May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry We	·	Sample Results µg/kg, Dry Weight
Benzene	2.4		N.D.
Ethyl Benzene	6.0		N.D.
Methyl-t-Butyl Ether	60		N.D.
Toluene	6.0		N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene		•••••	N.D.
Xylene	18		N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4040898.ADV <12>



Advent Environmental Services Client Project ID: 96804, Roetthens, Villard Sampled: Apr 14, 1994 6100 W. Executive. Suite E Sample Descript: Soil: W-8 Received: Apr 15, 1994 Mequon, WI 53092 Analysis Method: EPA 5030/8020 Analyzed: Apr 27, 1994 Attention: Chris Kern Lab Number: 404-0907 May 2, 1994 Reported:

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Liming μ g/kg , Dry We		Sample Results µg/kg, Dry Weight
Benzene	2.4	•••••	N.D.
Ethyl Benzene	6.0		7.4
Methyl-t-Butyl Ether	60		N.D.
Toluene	6.0	***************************************	., 6.0
124 Trimethylbenzene	12	***************************************	31
135 Trimethylbenzene	12	***************************************	25
Xylene	18		30

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W Keeley Laboratory Director

4040898.ADV <13>



Advent Environmental Services Client Project ID: 96804, Roetthens, Villard Sampled: Apr 14, 1994 6100 W. Executive, Suite E Sample Descript: Soil: W-9 Received: Apr 15, 1994 Mequon, WI 53092 Analysis Method: EPA 5030/8020 Analyzed: Apr 27, 1994 Attention: Chris Kern Lab Number: 404-0908 Reported: May 2, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limi µg/kg , Dry We	•	Sample Results µg/kg, Dry Weight
Benzene	2.4	***************************************	N.D.
Ethyl Benzene	6.0	•••••	N.D.
Methyl-t-Butyl Ether		***************************************	N.D.
Toluene	6.0	***************************************	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	•••••	N.D.
Xylene		•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKER ANALYTICAL

Kevin W. Keeley Jaboratory Director

4040898.ADV <14>



6100 W. Executive, Suite E

Mequon, WI 53092 Attention: Chris Kern Client Project ID: 96804, Roetthens, Villard

QC Sample Group: 4040898-908

Reported: Apr 2, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Percent Solids				
Method: Analyst: Reporting Units: Date Analyzed: QC Sample #:	160.3 A. Preshlock % Apr 21, 1994 BLK042194				
Sample Conc.:	N.D.		•		
Spike Conc. Added:	950				
Conc. Matrix Spike:	860				
Matrix Spike % Recovery:	91				
Conc. Matrix Spike Dup.:	840				
Matrix Spike Duplicate % Recovery:	88				
Relative % Difference:	2.0				

Laboratory blank contained the following analytes: None Detected

GREAT LAKES ANALYTICAL

evin W. Keeley

Laboratory Director

% Recovery:

Conc. of M.S. - Conc. of Sample Spike Conc. Added x 100

Salativa Of Differences

Conc. of M.S. - Conc. of M.S.D.

x 100

Relative % Difference:

(Conc. of M.S. + Conc. of M.S.D.) / 2 4040898.ADV < 15

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Client Project ID: 96804, Roetthens, Villard

6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

QC Sample Group: 4040898-908

Reported: Apr 2, 1994

QUALITY CONTROL DATA REPORT

ANALYTE

WGRO

Method:

WGRO

Analyst:

J. Wallace

Concentration:

2,000

Units:

ng

MATRIX SPIKE DATA

Date Prepared:

Apr 27, 1994

Date Analyzed:

Apr 27, 1994

Instrument I.D.#

GC-5

Matrix Spike

% Recovery:

96

METHOD SPIKE & DUP. DATA

Date Prepared:

Apr 27, 1994

Date Analyzed:

Apr 27, 1994

Instrument I.D.#

GC-5

Method Spike

% Recovery:

109

Method Spike Duplicate %

Recovery:

90

Relative %

Difference:

19

GREAT LAKES ANDLYTICAL

(evin4V. Keeley Laboratory Director % Recovery:

Conc. of M.S. - Conc. of Sample

x 100

Spike Conc. Added

Relative % Difference:

Conc. of M.S. - Conc. of M.S.D.

x 100

(Conc. of M.S. + Conc. of M.S.D.) / 2

4040898.ADV < 16



Client Project ID: 96804, Roetthens, Villard

6100 W. Executive, Suite E Mequon, WI 53092

Attention: Chris Kern QC Sample Group: 4040898-908

Reported: Apr 2, 1994

4040898.ADV < 17

QUALITY CONTROL DATA REPORT

ANALYTE		**************************************					
	Benzene	Toluene	Ethylbenzene	Xylene			
Method:	8020	8020	8020	8020			
Analyst:	J. Wallace	J. Wallace	J. Wallace	J. Wallace			
Concentration:	50	50	50	50			
Units:	ng	ng	ng	ng			
MATRIX SPIKE						•	
DATA							
Date Analyzed:	Apr 27, 1994	Apr 27, 1994	Apr 27, 1994				
Instrument I.D.#	GC-5	GC-5	GC-5	GC-5			
Matrix Spike							
% Recovery:	108	110	104	100			
•							
METHOD SPIKE							
& DUPLICATE		•					
DATA							
Data Analymadi	A 07 4004	A = 07 4004	4 - 07 4004				
Date Analyzed: Instrument I.D.#	Apr 27, 1994 GC-5	Apr 27, 1994 GC-5	Apr 27, 1994 GC-5	Apr 27, 1994 GC-5			
msaumena.b.#	GC-5	GC-5	GC-5	GC-5			
Method Spike					•		
% Recovery:	92	88	86	86			
Mathad Outle							
Method Spike			•				
Duplicate % Recovery:	96	96	94	92			
70 Hecovery:	30	30	34	92			
Relative %							
Difference:	4.3	8.7	8.9	6.7			

GREAT LAKES ANALYTICAL

% Recovery: Conc. of M.S. - Conc. of Sample x 100
Spike Conc. Added

Relative % Difference: Conc. of M.S. - Conc. of M.S.D. x 100

evit W Keeley (Conc. of M.S. + Conc. of M.S.D.) / 2
aboratory Director

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92
414-238-1998

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT	NAM	E					//		7		
96804	R	not	iers.	Villar	α			/ /		/ /		
SAMPLERS: (S	ignature)	0 011	}	1 -		NO.		/ ,	/ /	/ ,	/ /	
•			in K	On.		OF				/ /		REMARKS
LAB NO. DATE	TIME	GRAB	STAT	ION LOCA	TION	CON- TAINERS	3%				/	·
\\/\ <i>\</i>	11:40	\times		W-3		2	1-1				川ここ	4040898
14/14	12:10	×		F-5-		2	16				P10=0	4040899
	1200	X		11-4		2	1/				P(0=0	4040900
418	12:35	×	U	J-5		2	11				10 (1	4040901
y <i>J</i> 4	1:0	X	F	=6		2	1 /				/('(4040902
4/14	1:15	<u> </u>	1/	W-6		2	11				/1 /1	4040903
4/14	1:30	×	4	 - 7		2					P(D=1	4040904
1/15	10:31	\ \ \	/	= 4		2	///				P10=15	4040905
1/15	11:45	X	_ }	=-7		2	1 1			f	PID = 0	4040906
14/10	12:50	X	l	1-8		2_	1 /				PID = 0	4040907
4/15		X		JN-9		2	11				P10=0	4040908
						<u> </u>						
						<u> </u>						·
Relinquished by	r: (Signatur	re)	1 ,	/ Time	Received by: (Signal			Date /			Report to:	1 - 1/
Chun Cl.	~		4/15/64	3:1084			4/15/	94	15:1	<u> </u>	Name	AVIS Rom
Relinquished by	r: (Signatur	re)	Date	/ Time 	Received by: (Signat	ture)		Date /	Time		Street	ALA
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Distribution: White - Accompanies Shipment; Yellow - Laboratory File; Pink - Coordinator Field Files



May 3, 1994

Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

Project: 96084, Roettgens, Villard

Enclosed are the results from 10 soil samples and 1 water sample received at Great Lakes Analytical on April 19, 1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4041205	Soil: F-8	4/18/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041206	Soil: E-5	4/18/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041207	Soil: F-9	4/18/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041208	Soil: W-10	4/18/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041209	Soil: W-11	4/18/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041210	Soil: E-6	4/18/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041211	Soil: W-12	4/19/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041212	Soil: F-10	4/19/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041213	Soil: W-13	4/19/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4041214	Soil: W-14	4/19/94	PVOC's, EPA 5030/8020 Percent Solids by EPA 160.3 WDNR GRO
4041215	Water, Methanol Blank	4/19/94	WDNR GRO

This report may not be reproduced, except in full, without the written approval of the laboratory.

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4041205.ADV <2>



Client Project ID: Sample Descript:

Analysis for:

96084, Roettgens, Villard

Soil

Percent Solids by EPA 160.3

First Sample #: 404-1205

Sampled: Apr 18-19, 1994

Received: Apr 19, 1994

Analyzed: Apr 25-26, 1994

Revised Report: May 9, 1994

LABORATORY ANALYSIS FOR:

Percent Solids by EPA 160.3

Sample Number	Sample Description	Detection Limit %	Sample Result %
404-1205	F-8	0.10	87
404-1206	E-5	0.10	87
404-1207	F-9	0.10	81
404-1208	W-10	0.10	82
404-1209	W-11	0.10	84
404-1210	E-6	0.10	87
404-1211	W-12	0.10	85
404-1212	F-10	0.10	82
404-1213	W-13	0.10	86
404-1214	W-14	0.10	86

GREAT LAKES ANALYTICAL

Kevin WAKeeley Laboratory Director

4041205.ADV <1>



Client Project ID: Matrix Descript: 96084, Roettgens, Villard

Soil WDNR GRO

Analysis Method: WDNR GI First Sample #: 404-1205 Sampled: Apr 18-19, 1994 Received: Apr 19, 1994

Analyzed: Apr 29-30, 1994
Revised Report: May 9, 1994

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	Low/Medium B.P. Hydrocarbons mg/kg, Dry Weight (ppm)	Chromatogram Description
404-1205	F-8	1.1	3.3	Late gas range, elevated baseline late peaks
404-1206	E-5	57	130	Gas pattern, plus gas range peaks
404-1207	F-9	1.2	N.D.	 .
404-1208	W-10	1.2	N.D.	· —
404-1209	W-11	1.2	1.3	Late gas range, elevated baseline late peaks
404-1210	E-6	4.6	15	Gas range, elevated baseline
404-1211	W-12	1.2	N.D.	_
404-1212	F-10	1.2	N.D.	
404-1213	W-13	1.2	N.D.	
404-1214	W-14	1.2	N.D.	

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance July 1993 WDNR SW 130 93 REV. Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley aboratory Director

4041205.ADV <2>



Client Project ID: Matrix Descript: 96084, Roettgens, Villard Water

Analysis Method: WDNR GRO First Sample #: 404-1215 Sampled: Received: Analyzed: Apr 19, 1994 Apr 19, 1994 Apr 30, 1994

Revised Report:

May 9, 1994

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit μg/L (ppb)	Low/Medium B.P. Hydrocarbons $\mu \mathrm{g/L}$ (ppb)	Chromatogram Description
404-1215	Methanol Blank	1,000	N.D.	*****

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance July 1993 WDNR SW 130 93 REV. Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin Wakeeley Laboratory Director 4041205.ADV <3>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

Client Project ID: Sample Descript:

96084, Roettgens, Villard Soil: F-8

Sampled: Received: Apr 18, 1994 Apr 19, 1994

Analysis Method: Lab Number:

EPA 5030/8020 404-1205

Analyzed: Revised Report:

Apr 29, 1994 May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W		Sample Results $\mu g/kg$, Dry Weight		
Benzene	2.2	***************************************	2.8		
Ethyl Benzene	5.5	************	15		
Methyl-t-Butyl Ether	55		N.D.		
Toluene	5.5		13		
124 Trimethylbenzene	11	************************	100		
135 Trimethylbenzene	11	*************************	54		
Xylene	17		64		

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES AWALYTICAL

Laboratory Director

4041205.ADV <4>

Sample Results



Analyte

Advent Environmental Services Client Project ID: Sample Descript: 6100 W. Executive, Suite E Analysis Method: Mequon, WI 53092 Lab Number: Attention: Chris Kern 404-1206

96084, Roettgens, Villard Soil: E-5 EPA 5030/8020

Apr 19, 1994 Received: Analyzed: Revised Report:

Sampled:

Apr 30, 1994 May 9, 1994

Apr 18, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

	μ g/kg , Dry W	/eight	μ g/kg, Dry Weight	
Benzene	110		. 1,800	
Ethyl Benzene	290		. 6,400	
Methyl-t-Butyl Ether	2,900	***************************************	N.D.	
Toluene	290		N.D.	
124 Trimethylbenzene	570		. 14,000	
135 Trimethylbenzene	570		. 3,700	
Xylene	860		. 20,000	

Detection Limit

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4041205.ADV <5>



Client Project ID: Sample Descript:

96084, Roettgens, Villard Soil: F-9

Sampled: Received: Apr 18, 1994 Apr 19, 1994

Analysis Method: Lab Number: EPA 5030/8020 404-1207

Analyzed: Revised Report:

Apr 29, 1994 May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W	Sample Results μ g/kg, Dry Weight	
Benzene	2.4		N.D.
Ethyl Benzene	6.0		N.D.
Methyl-t-Butyl Ether	60		N.D.
Toluene	6.0	***************************************	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	***************************************	N.D.
Xylene	18	•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4041205.ADV <6>



Client Project ID: Sample Descript:

Analysis Method:

Lab Number:

96084, Roettgens, Villard

Soil: W-10 EPA 5030/8020

404-1208

Received: Analyzed:

Apr 18, 1994 Apr 19, 1994 Apr 29, 1994

Revised Report:

Sampled:

May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W	Sample Results µg/kg, Dry Weigh	
Benzene	2.4		N.D.
Ethyl Benzene	6.0	•••••	N.D.
Methyl-t-Butyl Ether	60	***************************************	N.D.
Toluene	6.0	***************************************	N.D.
124 Trimethylbenzene	12		N.D.
135 Trimethylbenzene	12		N.D.
Xylene	18		N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

aboratory Director

4041205.ADV <7>



Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96084, Roettgens, Villard

Soil: W-11 EPA 5030/8020 404-1209

Sampled: Apr 18, 1994 Received: Analyzed:

Revised Report:

Apr 19, 1994 Apr 29, 1994 May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry W		Sample Results µg/kg, Dry Weight		
Benzene	2.4		N.D.		
Ethyl Benzene	6.0	***************************************	N.D.		
Methyl-t-Butyl Ether	60	****	N.D.		
Toluene	6.0		N.D.		
124 Trimethylbenzene	12		23		
135 Trimethylbenzene	12		13		
Xvlene	18	***************************************	N.D.		

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

Kéyin W Keeley Laboratory Director

4041205.ADV <8>

Apr 18, 1994

Apr 19, 1994

Apr 30, 1994

May 9, 1994



96084, Roettgens, Villard Sampled: **Advent** Environmental Services Client Project ID: Soil: E-6 Received: 6100 W. Executive, Suite E Sample Descript: Analysis Method: EPA 5030/8020 Analyzed: Mequon, WI 53092 Lab Number: **Revised Report:** 404-1210 Attention: Chris Kern

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W	nit /eight	Sample Results μ g/kg, Dry Weight		
Benzene	9.2	•••••	N.D.		
Ethyl Benzene	23		. 77		
Methyl-t-Butyl Ether.	230		N.D.		
Toluene	23		N.D.		
124 Trimethylbenzene	46		. 150		
135 Trimethylbenzene	46		. 130		
Xylene	69	************	. 270		

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Kegey Laboratory Director



Client Project ID: Sample Descript: 96084, Roettgens, Villard Soil: W-12 Sampled: Received: Apr 19, 1994 Apr 19, 1994

Analysis Method: Lab Number: EPA 5030/8020 404-1211

Analyzed: Revised Report:

Apr 30, 1994 May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry W	Sample Results µg/kg, Dry Weight	
Benzene	2.4		N.D.
Ethyl Benzene	6.0		N.D.
Methyl-t-Butyl Ether	60	***************************************	N.D.
Toluene	6.0		N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12		N.D.
Xylene	18	•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4041205.ADV <10>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092 Attention: Chris Kern

Analyte

Client Project ID: Sample Descript:

96084, Roettgens, Villard

Soil: F-10

Analysis Method: EPA 5030/8020 Lab Number: 404-1212

Sampled:

Apr 19, 1994 Apr 19, 1994

Received: Analyzed: Apr 30, 1994

May 9, 1994 **Revised Report:**

Sample Results

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

·	μg/kg , Dry Weight	μ g/kg, Dry Weight
Benzene	2.4	<i></i> 5.9
Ethyl Benzene	6.0	

Detection Limit

N.D. Toluene..... 6.0 N.D. 124 Trimethylbenzene..... 12 33 135 Trimethylbenzene..... 12 N.D. Xylene..... 18 26 ------

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYZICAL

Keeley Laboratory Director

4041205.ADV <11>



Client Project ID: Sample Descript:

96084, Roettgens, Villard

Soil: W-13 EPA 5030/8020

Received: Analyzed: Revised Report:

Sampled:

Apr 19, 1994 Apr 19, 1994 Apr 30, 1994

Analysis Method: Lab Number:

404-1213

May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limi µg/kg , Dry W	Sample Results μ g/kg, Dry Weight	
Benzene	2.4		N.D.
Ethyl Benzene	6.0		N.D.
Methyl-t-Butyl Ether	60	•••••	N.D.
Toluene	6.0	•••••	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12		N.D.
Xylene	18		N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

4041205.ADV <12>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092 Attention: Chris Kern Client Project ID: Sample Descript:

Analysis Method:

Lab Number:

96084, Roettgens, Villard

Soil: W-14 EPA 5030/8020 404-1214

Sampled:

Apr 19, 1994

Received: Analyzed: Apr 19, 1994 Apr 30, 1994

Revised Report: May 9, 1994

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W	Sample Results μ g/kg, Dry Weight	
Benzene	2.4	•••••	N.D.
Ethyl Benzene	6.0	••••••	N.D.
Methyl-t-Butyl Ether	60	***************************************	N.D.
Toluene	6.0	***************************************	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene		***************************************	N.D.
Xylene	18	•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

Kevin W. Keeley Laboratory Director

4041205.ADV <13>



CHAIN OF CUSTODY REPORT

1###BUS ARK BUFFALO GROVE, ILLINOIS 60089-4505 (708) 808-7766 FAX (708) 808-7772

C. Lance	M ANALY IICAL				Villard 1	LUK 5.9			
Client:	Alvent Environ	mental	Project:	Roelfger	5 Thrensville	# 96084	TAT: (5 DAY)) 4 DAY 3 DAY	1 2 DAY 1 DAY < 24 HR
Address:	6100 WEXEW		Sampler	: Clivis	Kem		DATE RESULT	'S NEEDED:	1/26/94
,			PO #:				TEMPERATUR	E UPON RECEIP	T: ON ICE
Report to:	Chrs Kem		Phone #	! :	FAX #:		AIR BILL NO.		
FIFI	LD ID, LOCATION		SAN	IPLE SUMMER SO	Separate Sep	ANALYSIS	TYPF	S CC S S S S S S S S S S	AMPLE DNTROL LABORATORY ID NUMBER
	F-8 -		21		GRO	FVOC	(10=0		
	T- /-	4/18 9.20	2011				0.0- 20		4041205
	E-5	4/18 9:25	IX.		- /(1(PID=300	_	4041206
<u>J</u>	F-9	4/18 10:35	10		((1(PID =0		4041207
	W-10 ·	4/18 1.15	11		1(/(P10 = 0		4041208
	W-11	4/18 1:30	11		/(/(P(0) = 1		4041209
	E-6	-4/18 2:3	ή		/('(PID = ZO	,	4041210
]	11-12	×/19 9:15	'1		/((/	P.D =0		4041211
	F-10 ·	4/19 9:30	"(11	11	PID =0		4041212
	W-13	4/19 9:35	11		1(٧	P'D=0		4041213
ון		4/14 1000	11		IC.		C10=1		4041214
ELINQUISAED (Vz) ELINQUISHED	Mothan Blank Y/19/44 DATE LL 2: UD TIME DATE	RECEIVED RECEIVED		19/84DATE 14:00 TIME DATE	RELINQUISHED RELINQUISHED		DATE RECEIVED DATE RECEIVED		404121 _A 5
	TIME	,		TIME	<u> </u>	,	TIME		14.4
OMMENTS:	5.9. Chr. fun-	Forger de	SC 140	Ollect-5	hald be V	Mas	P-77		
						UUK		PAGE	/ OF /



6100 W. Executive, Suite E Meguon, WI 53092 Attention: Chris Kern

Client Project ID: 96084, Roettgens, Villard

QC Sample Group: 4041205-1214

Reported: May 3, 1994

QUALITY CONTROL DATA REPORT

ANALYTE Percent Solids Method: 160.3 Analyst: A. Preshlock Reporting Units: Date Analyzed: Apr 26, 1994 QC Sample #: BLK042694 N.D. Sample Conc.: Spike Conc. Added: 950 Conc. Matrix Spike: 940 **Matrix Spike** % Recovery:

99

Conc. Matrix

Spike Dup.:

880

Matrix Spike Duplicate

% Recovery:

93

Relative

% Difference:

7.0

Laboratory blank contained the following analytes: None Detected

GREAT LAKES ANALYTICAL

Conc. of M.S. - Conc. of Sample

x 100

Spike Conc. Added

Relative % Difference:

% Recovery:

Conc. of M.S. - Conc. of M.S.D. (Conc. of M.S. + Conc. of M.S.D.) / 2 x 100

4041205.ADV < 14

W. Keeley aboratory Director



Advent Environmental Services 6100 W. Executive, Suite E

Client Project ID: 96084, Roettgens, Villard

6100 W. Executive, Su Mequon, WI 53092 Attention: Chris Kern

QC Sample Group: 4041205-1215

Reported: May 3, 1994

QUALITY CONTROL DATA REPORT

ANALYTE

WGRO

Method:

WGRO

Analyst:

J. Wallace

Concentration:

2,000

Units:

ng

MATRIX SPIKE DATA

Date Analyzed:

Apr 29, 1994

Instrument I.D.#

GC-5

Matrix Spike

% Recovery:

105

METHOD SPIKE & DUP. DATA

Date Analyzed:

Apr 29, 1994

Instrument I.D.#

GC-5

Method Spike

% Recovery:

110

Method Spike

Duplicate %

Recovery:

105

Relative %

Difference:

4.7

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director % Recovery:

Conc. of M.S. - Conc. of Sample

x 100

Spike Conc. Added

Relative % Difference:

Conc. of M.S. - Conc. of M.S.D. (Conc. of M.S. + Conc. of M.S.D.) / 2 x 100

4041205.ADV < 15>



Advent Environmental Services

Client Project ID: 96084, Roettgens, Villard

6100 W. Executive, Suite E Mequon, WI 53092 Attention: Chris Kern

QC Sample Group: 4041205-1214

Reported: May 3, 1994

QUALITY CONTROL DATA REPORT

ANALYTE					
	Benzene	Toluene	Ethylbenzene	Xylene	
Method: Analyst: Concentration: Units:	8020 J. Wallace 50 ng	8020 J. Wallace 50 ng	8020 J. Wallace 50 ng	8020 J. Wallace 50 ng	
MATRIX SPIKE DATA					
Date Analyzed: Instrument I.D.#	Apr 30, 1994 GC-5	Apr 30, 1994 GC-5	Apr 30, 1994 GC-5	Apr 30, 1994 GC-5	
Matrix Spike % Recovery:	96	98	106	100	
METHOD SPIKE & DUPLICATE DATA					•
Date Analyzed: Instrument I.D.#	Apr 30, 1994 GC-5	Apr 30, 1994 GC-5	Apr 30, 1994 GC-5	Apr 30, 1994 GC-5	
Method Spike % Recovery:	92	94	96	98	
Method Spike Duplicate % Recovery:	86	86	86	90	
Relative % Difference:	6.7	8.9	11	8.5	

GREAT LAKES ANALYTICAL

Keym W. Leeley Laboratory Director % Recovery: Conc. of M.S. - Conc. of Sample x 100
Spike Conc. Added

Relative % Difference: Conc. of M.S. - Conc. of M.S.D. x 100

(Conc. of M.S. + Conc. of M.S.D.) / 2

4041205 ADV < 16>

ADVENT

ENVIRONMENTAL SERVICES, INC.

March 1, 1994

John Feeney Wisconsin Department of Natural Resources P.O. Box 12436 Milwaukee, WI 53212

re:

Soil remediation at the Roettgers, Villard Avenue site, 3709 W. Villard Avenue, Milwaukee, WI Advent Project No. 96804.02

Dear John:

Advent proposes soil excavation and landfilling to remediate petroleum contaminated soils at the captioned site.

Review of Site Assessment

Advent's site assessment report (mailed to you in February 1994) defined the extent of petroleum contaminated soil at the site. Figure 1 indicates the extent of GRO contaminated soil. Contamination at concentrations sufficient to cause a PID response were typically detected to depths of 10-12 feet (Figure 2). Laboratory analysis of soil samples collected at the base of the borings (typically 21 feet) indicate GRO concentration of less than 5 ppm under the "hot spot" of the contaminated area.

Several borings were completed to investigate the presence of contamination in the former fuel oil UST location. DROs were detected in boring B-4 at a concentration of 16 ppm. All other samples collected in borings completed in this area did not contain DRO contamination at concentrations exceeding laboratory detection limits.

Groundwater was not encountered in the borings which were completed to a maximum depth of 51 feet.

Soil Remediation Proposal

Advent proposes excavating GRO contaminated soil from the site in an area indicated on Figure 3. The excavation would extend to a depth of approximately 12 feet, or to depths where field screening with a PID no longer detected VOCs. This proposed excavation would leave areas of contaminated soil on site. One area extends beneath 37th Street an unknown distance. The second area, with estimated concentrations below 100 ppm, extends beneath the pump island, UST piping run, and canopy area at the site. Remaining soil contamination at the site would be largely immobile in the clay soils at the site and would not constitute a hazard to groundwater or human health because of the depth to groundwater.

Page Two

Excavation is not planned for the low level detect from the former fuel oil UST location. Lack of other detects in adjacent borings indicate that this contaminated area is of limited extent.

Advent estimates that approximately 1,400 cubic yards or 2,200 tons of contaminated soil is present in the area to be excavated. Analysis of remedial options for the PECFA program indicate this remedial option to be the lowest cost.

Please call me at (414) 238-1874 ext. 3018 if you have any further questions.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Chris A. Kern, C.P.G.

Hydrogeologist

cak:jad

cc: Mr. Don Roettgers, 5169 N. 37th Street, Milwaukee, WI 53209

Mr. Dave Roettgers c/o Weiss, Berzowski, Brady, & Donahue, 700 N. Water Street, Milwaukee, WI $53202 \cdot 4273$

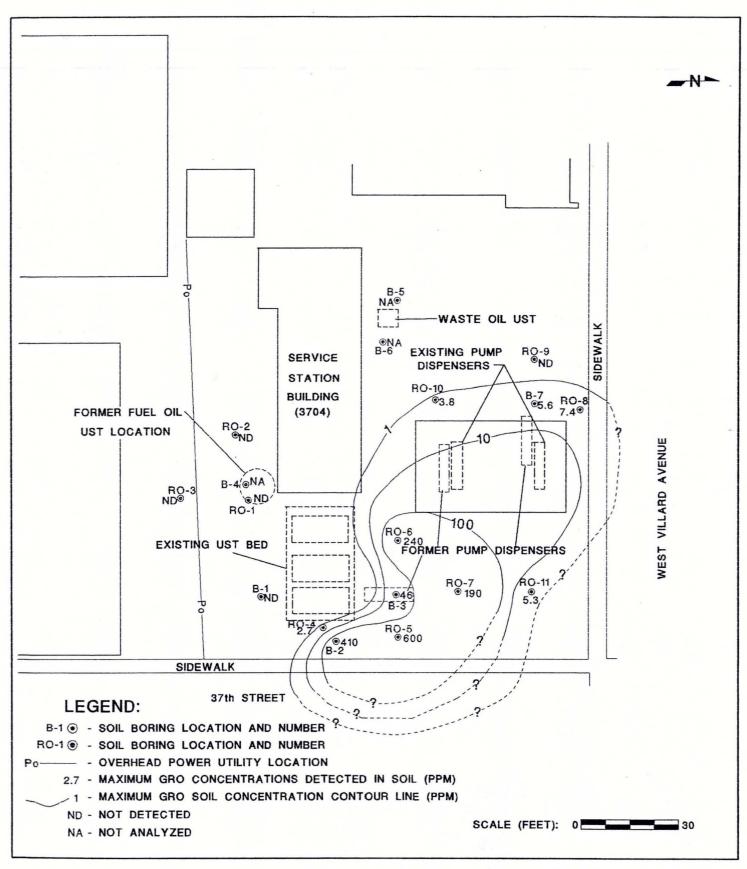


FIGURE 1 EXTENT OF GRO
CONTAMINATED SOIL (PPM)
37th AND VILLARD
MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 6/7/93 DRAWING # 96804CE

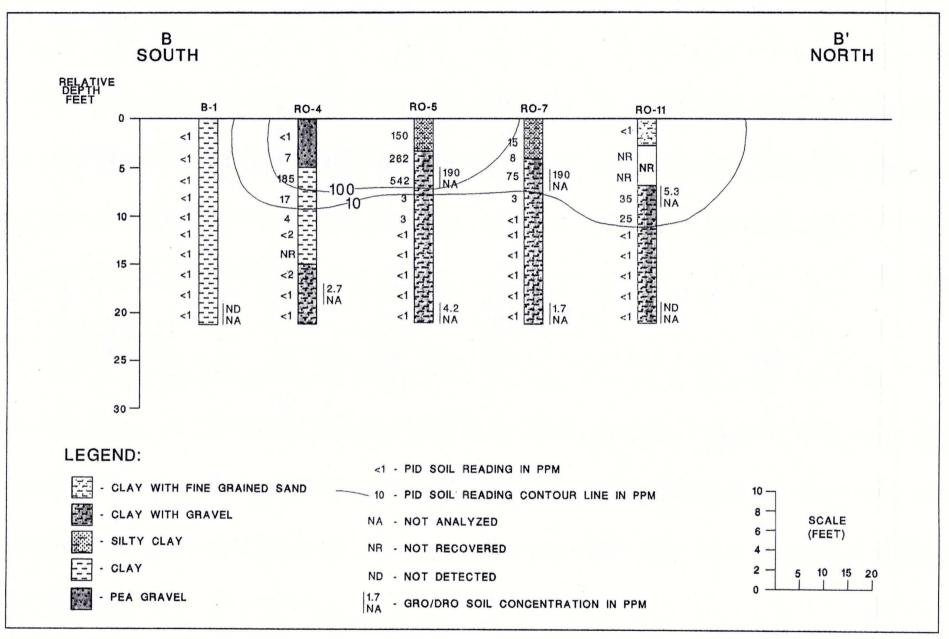


FIGURE 2 SOUTH TO NORTH PEDOLOGIC CROSS-SECTION B-B'
37th AND VILLARD
MILWAUKEE, WISCONSIN

ADVENT

ENVIRONMENTAL SERVICES, INC. DATE: 6/4/9
DRAWING # 96804CD

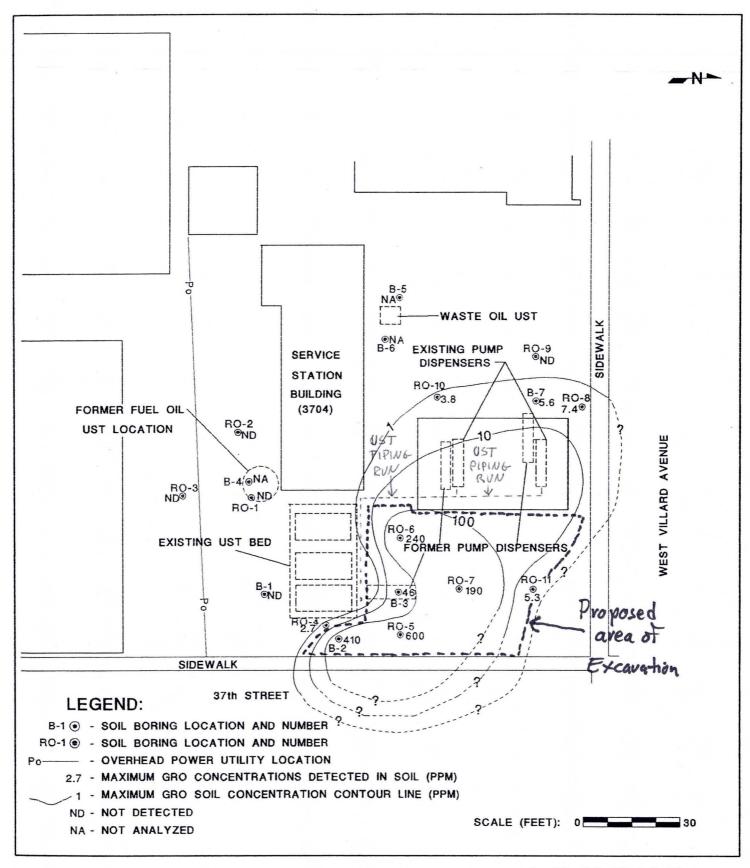


FIGURE 3 EXTENT OF GRO
CONTAMINATED SOIL (PPM)
37th AND VILLARD
MILWAUKEE, WISCONSIN

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ENVIRONMENTAL SERVICES, INC.

November 17, 1993

Mr. Don Roettger Roettgers Oil 5169 N. 37th Street Milwaukee, WI 53209

Dear Mr. Roettger:

Enclosed is a the Phase III Environmental Assessment for the Roettgers Oil Site, 3709 W. Villard Avenue, city of Milwaukee, Milwaukee County, Wisconsin, Advent project No. 96804.

Upon your approval, a copy of the assessment will be submitted to the Wisconsin Department of Natural Resources at the following address:

Ms. Sibyl Lapinski Wisconsin Department of Natural Resources P.O. Box 12436 Milwaukee, WI 53212

Upon your approval, Advent will submit a copy of this report to the following agency when the first PECFA claim is filed:

Wisconsin Department of Industry, Labor and Human Relations Bureau of Petroleum Inspection and Fire Protection P.O. Box 7969 Madison, WI 53707

The WDNR will review the assessment and based on the contaminant levels identified and the specific features of the site, a decision will be made on whether further action or investigation is required.

If you have any questions regarding these results, please do not hesitate to contact Advent.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Thomas R. Mize Hydrogeologist

Phase III

Environmental Assessment

for the

Roettgers Oil Site

3709 West Villard Avenue

City of Milwaukee

Milwaukee County, Wisconsin

November 1993

Prepared for Mr. Don Roettgers

ADVENT

Environmental Services, Inc. 6100 W. Executive Drive, Suite E Mequon, Wisconsin 53092 Advent Project No. 96804

Phase III

Environmental Assessment

for the

Roettgers Oil Site

3709 W. Villard Avenue

City of Milwaukee

Milwaukee County, Wisconsin

Prepared By:

Thomas R. Mize

Hydrogeologist

Advent Environmental Services, Inc.

Reviewed By:

Stephén G. Reuter, C.P.G. AIPG Certificate No. 7836

Senior Hydrogeologist

Advent Environmental Services, Inc.

Date: 11/1

Date:

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- B. Site Photographs
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ABBREVIATIONS

AST aboveground storage tank

DRO diesel range organic ES Enforcement Standard GRO gasoline range organic

PAH polynuclear aromatic hydrocarbon

PCB polychlorinated biphenyl PID photoionization detector

ppb parts per billion ppm parts per million

PVOC petroleum volatile organic compound

QC quality control

TCLP toxicity characteristic leaching procedure total recoverable petroleum hydrocarbons

UST underground storage tank VOC volatile organic compound

WDILHR Wisconsin Department of Industry, Labor

and Human Relations

WDNR Wisconsin Department of Natural

Resources

WDOT Wisconsin Department of Transportation

EXECUTIVE SUMMARY

1.1 Findings and Conclusions

Advent Environmental Services, Inc. has completed a Phase III Environmental Assessment for the Roettgers Oil site located at 3709 West Villard Avenue in the city of Milwaukee, Milwaukee County, Wisconsin. This assessment was conducted from March 30 to April 2, 1993, for Mr. Don Roettger, site owner.

This assessment revealed:

- The Roettgers Oil site is an approximately 0.4-acre lot with a one-story structure used as a retail gasoline station.
 - The site history revealed that the site has been an automobile service and fuel station from 1981 to 1989 and an automobile fuel station from 1989 to the present. A fuel oil underground storage tank (UST) was installed near the southeast corner of the building and was removed in 1984. A 1,000-gallon waste oil UST installed in approximately 1968 is located approximately 10 feet north of the garage, is currently not in use, and will be removed. In 1989, four leaded gasoline USTs of unknown size were removed and replaced with one 8,000-gallon and two 4,000-gallon unleaded gasoline USTs; three former pump islands were removed and replaced with two pump islands.
- Neighboring properties are used for commercial and residential purposes.

- Eleven soil borings were drilled during this Phase III assessment to
 determine the horizontal and vertical extent of subsurface contamination.
 Depths of the borings ranged from 21 to 51 feet. Groundwater was not
 encountered in any of the borings.
- Field screening of soil samples from five borings with a photoionization detector (PID) indicated the presence of volatile organic compounds (VOCs) in excess of background levels at the site. Levels of PID detects ranged from <1 to 565 parts per million [ppm (benzene equivalent instrument units)].
- Selected soil samples collected from the borings were chemically analyzed for appropriate parameters including gasoline range organics (GROs), diesel range organics (DROs), total lead, polychlorinated biphenyls (PCBs), and petroleum volatile organic compounds (PVOCs).
- Two soil samples were collected and analyzed for disposal parameters including polychlorinated biphenyls (PCBs), flash point, pH, toxicity characteristic leaching procedure (TCLP) benzene, and TCLP lead.
- GROs were detected at concentrations above laboratory detection limits in soil samples collected from seven borings completed in the vicinity of the gasoline UST system. Concentrations ranged from 1.2 to 600 ppm.
- DROs were not detected at concentrations above laboratory detection limits in soil samples collected from three borings completed in the vicinity of the fuel oil UST system.

- Total lead was detected in all soil samples analyzed but at concentrations below levels that are considered to have the potential to exceed regulated levels and within the range of naturally occurring concentrations.
- PVOCs were detected in soil samples collected from the 11 borings completed at the site at concentrations above laboratory detection limits. Compounds detected included benzene at levels ranging from 190 to 430 parts per billion (ppb); ethylbenzene from 6 ppb 4,900 ppb; toluene from 2.6 to 490 ppb, 1,2,4-trimethylbenzene from 16 to 14,000 ppb, 1,3,5-trimethylbenzene from 15 to 4,000 ppb, and xylene from 7.5 to 15,000 ppb. There are presently no regulated levels for PVOCs in soil.
- PCBs were not detected in soil samples above laboratory detection limits.
- TCLP benzene was not detected in soil samples above laboratory detection limits.
- Analysis of a representative soil sample for geotechnical parameters determined that the soils at the site are a lean clay with sand, with a Unified Soil Classification of CL. The representative sample was 21.2% sand, 29.6% silt, and 49.2% clay.
- Groundwater was not encountered in any of the borings.

1.2 Recommendations

Advent recommends that the petroleum-impacted soils at the Roettgers Oil site be treated by the most cost-effective technology available. Based on field observations and analytical results of soil collected at the Roettgers Oil site, current technologies that may be appropriate include: active in-situ soil venting, excavation with thermal treatment, or excavation and landfilling at a WDNR-approved facility.

Based on similar sites, Advent believes that excavation and landfill disposal will likely be the most efficient strategy that can be developed and implemented to remediate the petroleum-impacted soil at the Roettgers Oil site. The data collected to date suggest that significantly impacted soil is limited to the clays and silty clays present from the surface to approximately nine feet below ground surface. The demonstrated vertical extent of impacted soil suggests that groundwater has not been impacted at the site.

If excavation and landfill disposal is the approved remediation option, an estimated 1,400 cubic yards (approximately 2,240 tons) of impacted soil will be removed and transported to a WDNR approved landfill for disposal. Impacted soil beneath 37th Street and Villard Avenue that cannot be removed by standard excavation methods is capped by pavement and does not pose a significant threat to human health and safety. The impermeable nature of the native clay soils at the site will likely impede further migration of contaminants since the source and the most heavily contaminated soil will have been removed. Impacted soil beneath 37th Street and Villard Avenue will be further isolated by installing an impermeable membrane along the east and north walls of the excavation prior to backfilling.

Active or passive bioremediation does not appear to be a likely candidate for successful remediation due to the predominance of clay material at the site.

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Remediation of the soil by soil venting is likely not practical due to the impervious nature of the soils that will limit the vacuum radius of influence resulting in a remediation system design likely to require a level of effort that will make soil venting economically undesirable for this site.

At the client's request, Advent will prepare a detailed cost comparison of alternative remediation technologies as required by ILHR 47 to ensure selection of the most cost-effective remediation strategy and maintain the client's eligibility for reimbursement under the Petroleum Environmental Cleanup Fund Act (PECFA).

SITE INVESTIGATION

2.1 Purpose and Scope

The Roettger's Oil site is located at 3709 West Villard Avenue in the city of Milwaukee, Milwaukee County, Wisconsin (see Figure 2-1). Petroleum-impacted soil was identified by a Phase II environmental assessment conducted at the site in July 1992 by Advent.

The purpose of Advent's Phase III Environmental Assessment was to define the horizontal and vertical extent of environmental contamination previously identified at the site that may be associated with the existing gasoline UST system and the previous fuel oil UST that was removed from the site in 1984. The assessment for this site consisted of the following:

- Review of all site background information;
- Review of topographic maps, soil and bedrock identification maps, and other sources of information regarding the physical characteristics and natural history of the site;
- Completion of 11 soil borings to a maximum depth of 51 feet;
- Collection of subsurface soil samples using a split spoon sampler and soil description according to the Unified Soil Classification System;
- Field screening of subsurface soil samples for VOCs with a PID using the headspace analysis method;
- Collection of 26 subsurface soil samples for chemical analysis; and
- Chemical analyses of 26 subsurface soil samples for GROs, DROs, total lead, and PVOCs. Two soil samples were analyzed for waste disposal parameters (flash point, pH, free liquids, specific gravity, TCLP lead, TCLP benzene, and PCBs).

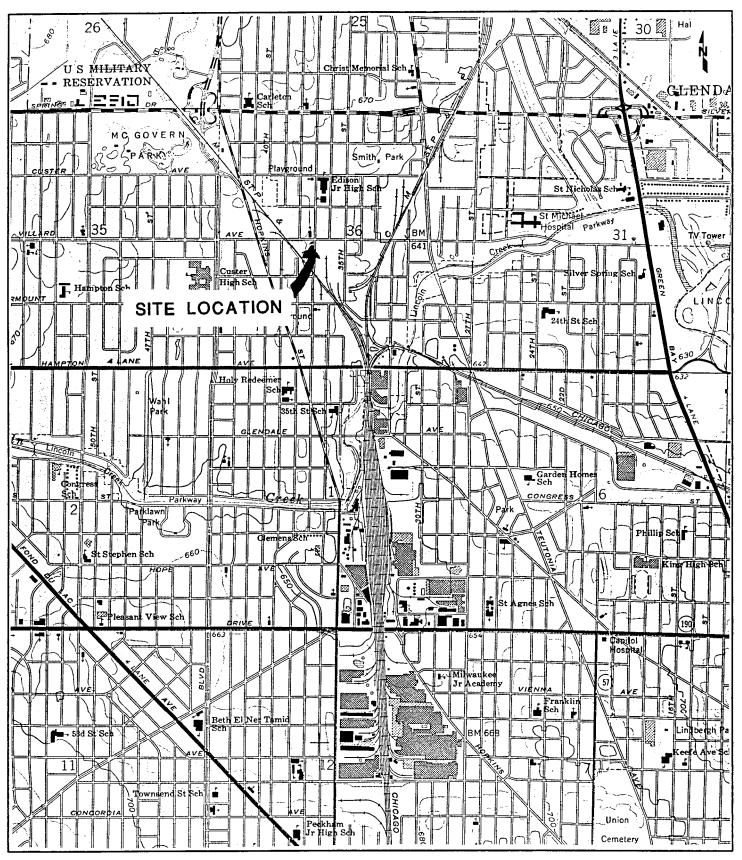


FIGURE 2-1 SITE LOCATION 37th AND VILLARD SITE MILWAUKEE, WISCONSIN



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Collection of one soil sample for analysis of geotechnical parameters including Atterberg Limits and Gradation Analysis.

Summary of Previous Work

On July 7, 1992, Advent completed seven soil borings at depths ranging from 11 to 21 feet at the Roettgers Oil site as part of a Phase II Environmental Assessment. A letter-report was prepared after the completion of this assessment for Weiss, Berzowski, Brady and Donohue, attorneys at law. Laboratory analysis of soil samples collected from soil borings B-2 and B-3 located around the gasoline UST bed detected GROs at concentrations of 46 and 410 ppm respectively. Laboratory analysis of the soil sample collected from soil boring B-4 located in the fuel oil UST bed detected DROs at a concentration of 16 ppm. Because GRO and DRO concentrations detected in soil borings B-2, B-3, and B-4 exceed the 10 ppm Wisconsin Department of Industry, Labor and Human Relations (WDILHR) remedial action guideline for petroleum-impacted soil, a Responsible Party letter was issued by the WDNR to Mr. Don Roettger on March 2, 1993.

Advent conducted a Phase III Environmental Assessment from March 30 to April 2, 1993, to determine the lateral and vertical extent of the contamination identified during the Phase II investigation. The results of this Phase III investigation is the subject of this report.

2.2 Site Reconnaissance Observations

The Roettgers Oil site is located in a commercial/residential district of the city of Milwaukee, Wisconsin. The site is bound on the east by 37th Street, on the north by West Villard Avenue, and on the south and west by commercial property lines. Lincoln Creek lies approximately 3,000 feet southeast of the site (Figure 2-2).

There is one building on the site. This building is currently used for selling automobile fuel. See Figure 2-2 for site features. Photographs of the site are provided in Appendix B. During completion of soil boring RO-8, a city water service lateral was encountered at a depth of approximately nine feet. Due to the proximity of the water line to the dispenser island, soils excavated to repair the water lateral were field screened with a PID. A PID response above background was observed, so approximately 30 cubic yards of soil excavated to repair the water lateral was stockpiled within an impermeable membrane on-site. A composite soil sample designated "STOCKPILE" was collected from the excavated soils and analyzed for GROs and PVOCs. These soils can be incorporated into future remediation activities at the site.

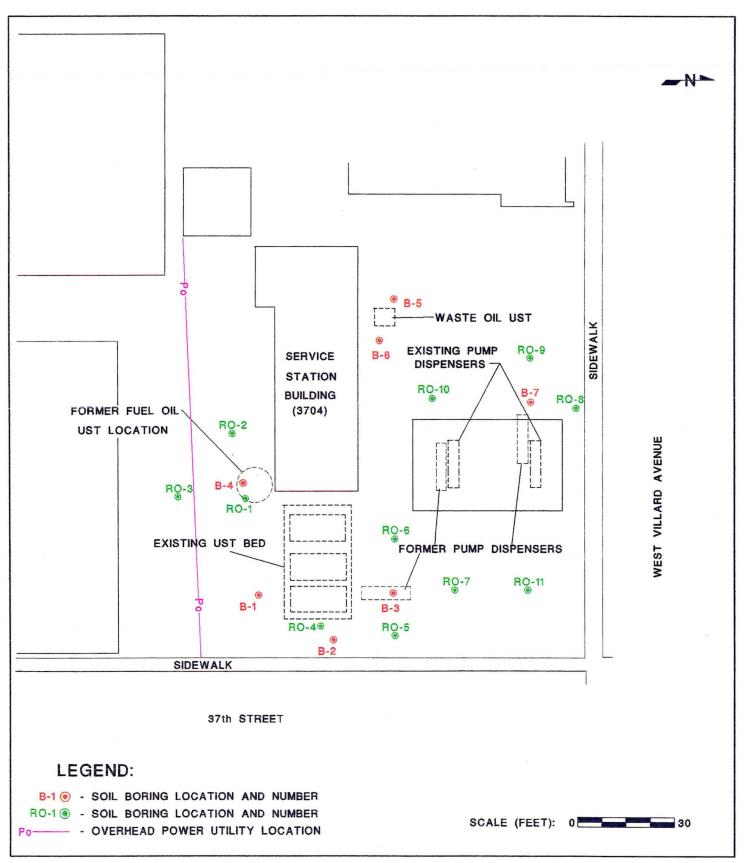


FIGURE 2-2 SITE FEATURES 37th AND VILLARD MILWAUKEE, WISCONSIN

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2.3 Site History

Interviews were conducted to gather information concerning past and present land uses of the Roettgers Oil site and the potential environmental impact of these activities.

Thomas R. Mize of Advent conducted a telephone interview with the following individual on May 11, 1993:

Mr. Don Roettger, site owner 5169 N. 37th Street Milwaukee, WI 53209 (414) 466-0890

Mr. Roettger stated that he does not know who owned the property prior to 1917. In 1917, Mr. Henry Roettger purchased this property and constructed a one-story office building. This office building served as a base of operations for Roettgers Fuel and Supply. In 1981, Mr. Don Roettger obtained ownership of the site and operated the site as an automobile fuel and service station. In 1989, automobile repair activities at the site were discontinued. The site operated as an automobile fuel station from 1989 to the present.

Table 2-1 shows the ownership history of the Roettgers Oil site.

	Table 2-1 Roettgers Oil Site H	istory		
Time Period	Owner	Site Activity		
Prior to 1917	Unknown	Undetermined		
1917 to 1981	Mr. Henry Roettger	one-story office building operated as Roettgers Fuel and Supply		
1981 to 1989	Mr. Don Roettger	operated as an automobile fuel and service station		
1989 to present	Mr. Don Roettger	operated as an automobile fuel station		

2.4 Site Geology

The Roettgers Oil site is located in the Eastern Ridges and Lowlands Physiographic Province of southeastern Wisconsin. The regional topography surrounding this site has been determined primarily by glaciation. The site is situated on ground moraine and end moraine deposits that were deposited by the Valdern-aged Lake Michigan lobe of the Wisconsinan ice sheet. Ground and end moraine deposits typically consist of poorly sorted sands, silts, and clays. Soils encountered in split spoon samples at the site consisted primarily of clay with some gravel.

According to the soil survey of Milwaukee and Waukesha Counties, a detailed soil survey by the United States Department of Agriculture Soil Survey has not been feasible because natural soils within the area have been greatly disturbed by development activities; therefore, the natural soil boundaries could not be easily recognized or plotted.

Well logs obtained from the Wisconsin Geologic and Natural History Survey indicate that bedrock at the site area is buried at depths of 80 to 200 feet by glacial material. Bedrock was not encountered in the soil borings during the site investigation. Maximum depth of these borings was 51 feet. Regionally, bedrock consists of Paleozoic era dolomite of the Silurian period.

According to the Natural History Survey well logs, groundwater occurs at depths of 75 to 85 feet in the area (see Appendix C). Surface topography suggests that groundwater is flowing toward the Lincoln Creek, which is located approximately 3,000 feet southeast of the site. Because groundwater was not encountered at this site, direction of groundwater flow could not be determined.

2.5 Sampling Procedures and Locations

Stephen G. Reuter of Advent supervised the collection of samples from borings RO-1 to RO-11 completed from March 30 to April 2, 1993. Groundwater was not encountered in any of the borings on-site; therefore, groundwater monitoring wells were not installed.

A total of 26 subsurface soil samples were collected from borings completed at the site to define the nature and extent of petroleum soil contamination and to determine soil type.

Locations of soil borings were influenced by buried and overhead utilities, existing structures, vegetation, and city streets in this urban location. See Table 2-2 for sampling rationale, depth, and location. See Figure 2-2 for soil boring/monitoring well locations and Appendix B for site photographs showing locations of soil borings.

The procedures followed for collecting soil samples and field screening of samples are included in Appendix D. See Appendix E for boring abandonment procedures and boring abandonment documentation. Appendix F contains the soil sample chain of custody documentation and procedures for maintaining sample security, identification, and integrity.

Table 2-2
Sampling Rationale, Depth, and Sample Locations
Soil

Sample Number	Boring	Depth (feet)	Location Rationale	Sampling Rationale
ROS-1A	RO-1	31-33	Define extent of contamination within former fuel oil UST location.	Soil sample characteristic of soils encountered in boring.
ROS-1B	RO-1	49-51	Define extent of contamination within former fuel oil UST location.	Deepest sample collected in boring.
ROS-1C	RO-1	9-11	Define extent of contamination within former fuel oil UST location.	Depth correlative to bottom of former tank.
ROS-2A	RO-2	15-17	Define extent of contamination directly adjacent to fuel oil UST location.	Depth correlative to DRO detect in tank bed.
ROS-2B	RO-2	23-25	Define extent of contamination directly adjacent to former fuel oil UST location.	Deepest sample collected in boring.
ROS-3A	RO-3	9-11	Define extent of contamination directly adjacent to former fuel oil UST location.	Depth correlative to base of former tank,
ROS-3B	RO-3	17-19	Define extent of contamination directly adjacent to former fuel oil UST location.	Soil sample characteristic of deep soils in boring.
ROS-4A	RO-4	17-19	Define extent of contamination east of existing UST bed.	Confirm vertical extent of impacted soil.
ROS-5A	RO-5	5-7	Define extent of contamination east of former pump island	Highest PID response in boring.
ROS-5A duplicate	RO-5	5-7	Define extent of contamination east of former pump island.	WDNR-mandated duplicate sample.
ROS-5B	RO-5	19-21	Define extent of contamination west of former pump island.	Confirm vertical extent of contamination. Deepest sample collected in boring.
ROS-6A	RO-6	5-7	Define extent of contamination north of existing UST bed and west of former pump island.	Highest PID response sampled.
ROS-6B	RO-6	19-21	Define extent of contamination north of exist- ing UST bed and west of former pump island.	Deepest sample collected in boring.
Fuel Oil			Drummed soil.	Composite for waste disposal parameters.
ROS-7A	RO-7	5-7	Define extent of contamination north of former pump island and east of present pump islands.	Highest PID response in boring.
ROS-7B	RO-7	19-21	Define extent of contamination north of former pump island and east of present pump islands.	Confirm vertical extent of contamination. Deepest sample collected in boring.
ROS-8B-A	RO-8	9-11	Define extent of contamination north of existing pump islands.	Depth correlative to GRO detect near pump island.
ROS-8B-B	RO-8	19-21	Define extent of contamination north of existing pump islands.	Confirm vertical extent of contamination. Deepest sample collected in boring.
ROS-8B-B duplicate	RO-8	19-21	Define extent of contamination north of existing pump islands.	WDNR-mandated duplicate sample.
ROS-9A	RO-9	9-11	Define extent of contamination west of existing pump islands.	Depth correlative to GRO detect near pump island.
ROS-9B	RO-9	19-21	Define extent of contamination west of existing pump islands.	Deepest sample collected in boring.

Table 2-2 (continued)

Sampling Rationale, Depth, and Sample Locations

Sample Number	Boring	Depth (feet)	Location Rationale	Sampling Rationale
ROS-10A	RO-10	9-11	Define extent of contamination west of existing pump island	Correlative to GRO detect near pump islands.
ROS-10B	RO-10	19-21	Define extent of contamination east of existing pump island	Deepest sample collected in boring.
ROS-11A	RO-11	7-9	Define extent of contamination east of existing pump island.	Highest PID response in boring.
ROS-11B	RO-11	19-21	Define extent of contamination east of existing pump island.	Confirm vertical extent of contamination. Deepest sample collected in boring.
Stockpile			Composite sample.	Composite sample for disposal parameters.

2.6 Analytical Results

This section summarizes results of screening soil samples in the field for VOCs; chemical analyses of soil samples for GROs, DROs, PVOCs, total lead, TCLP benzene, TCLP lead, PCBs, flash point, and pH.

Results of Field Screening

Subsurface soil samples were screened for VOCs with a calibrated PID immediately after the split spoon sampling tube was opened (see Appendix G for PID calibration documentation) and during excavation of soils to repair a water service line in the vicinity of the dispenser island. A summary of field screening results of subsurface soil samples is as follows:

- Subsurface soil samples from five borings yielded a PID headspace response above background levels.
- Subsurface soil samples from six borings yielded a PID headspace response of <1 ppm (benzene equivalent instrument units).
- Field screening soil excavated to repair a water service line in the vicinity of the dispenser islands yielded a PID headspace response above background levels.

Figure 2-3 illustrates the estimated extent of contaminated soil based on PID response. This figure shows the maximum PID detect in each boring for soil samples collected above groundwater. West-east and south-north cross sections illustrate the estimated vertical extent of the contaminated soil based on PID data (Figure 2-4 and

Figure 2-5). Soil types logged from the split spoon samples are included in the cross sections.

All PID responses relative to depth for each boring completed at the Roettgers Oil site are recorded on soil profile logs (see Appendix H). Also recorded on the soil logs are sediment type, amount of sediment recovery in the split spoon samples, and the number of blow counts required to advance the sampling spoon. Appendix H also includes the WDNR monitoring well construction reports and the monitoring well development forms.

Soil drill cuttings that had PID detects of >1 ppm benzene equivalent instrument units were drummed on-site. Soil excavated to repair a water service line that yielded a PID response above background was stockpiled within an impermeable membrane on-site. See Appendix I for location of stockpiled and drummed investigative waste. Drill cuttings that did not yield a PID response above background levels were dispersed on-site.

Analytical Methods Utilized for Chemical Analyses of Samples

Great Lakes Analytical Labs of Buffalo Grove, Illinois, analyzed the soil samples collected at the Roettgers Oil site. Samples were chemically analyzed using the analytical methods listed in Appendix J. Each analytical method follows specific quality control (QC) criteria listed in the reference manual describing the method. This includes the selection and calibration of appropriate instruments and the use of QC samples. Daily performance tests and the demonstration of precision and accuracy in the laboratory are required.

Results of Chemical Analyses of Samples

Soil Samples

Chemical analyses of 26 soil samples yielded the following results:

- GROs were detected at concentrations above laboratory detection limits in soil samples collected from seven borings completed in the vicinity of the gasoline UST system. Concentrations ranged from 1.2 to 600 ppm. Figure 2-6 illustrates the estimated extent of soil GRO contamination from laboratory analyses of collected soil samples.
- DROs were not detected at concentrations above laboratory detection limits
 in soil samples collected from three borings completed in the vicinity of the
 fuel oil UST system.
- Total lead concentrations above laboratory detection levels were detected in all samples analyzed ranging from 13 ppm to 20 ppm.
- PVOC compounds were detected in soil samples collected from each of the 11 borings. Benzene concentrations ranged from 190 to 430 ppb, ethylbenzene concentrations ranged from 6 to 4,900 ppb, toluene concentrations ranged from 2.6 to 490 ppb, 1,2,4-trimethylbenzene concentrations ranged from 16 to 14,000 ppb, 1,3,5-trimethylbenzene concentrations ranged from 15 to 4,000 ppb, and xylene concentrations ranged from 7.5 to 15,000 ppb.
- Results of laboratory analyses of two samples for disposal parameters detected no presence of PCBs or TCLP benzene at concentrations above laboratory detection limits; a flash point of >200°F; no free liquids; a pH of 9.6 and 9.8, and TCLP lead concentrations of 0.0085 and 0.013 ppm.

Results of analysis of a representative soil sample for geotechnical parameters determined that soils at the site are a lean clay with sand with a Unified Soil Classification of CL. Soil at the site is 21.2% sand, 29.6% silt, and 49.2% clay.

Table 2-3 contains summarized results of the chemical analyses of the assessment soil samples collected from the borings. Table 2-4 contains summarized results of the disposal parameter analyses. Copies of laboratory data reports are provided in Appendix J. All analyses are reported on a dry-weight basis.

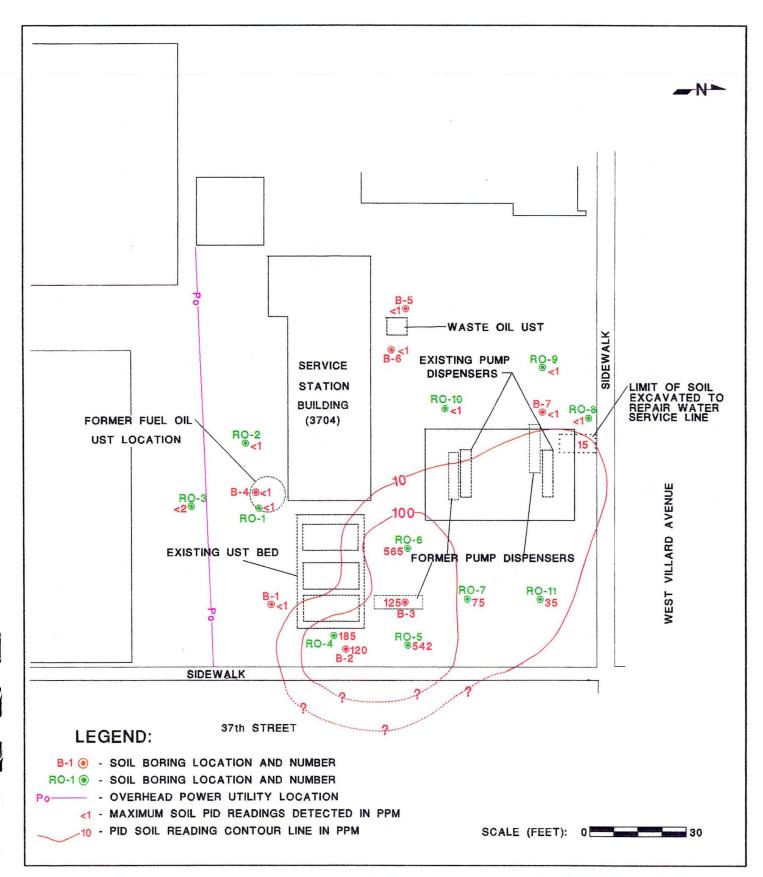


FIGURE 2-3 MAXIMUM PID READINGS DETECTED IN SOIL BORINGS (PPM) 37th AND VILLARD MILWAUKEE, WISCONSIN

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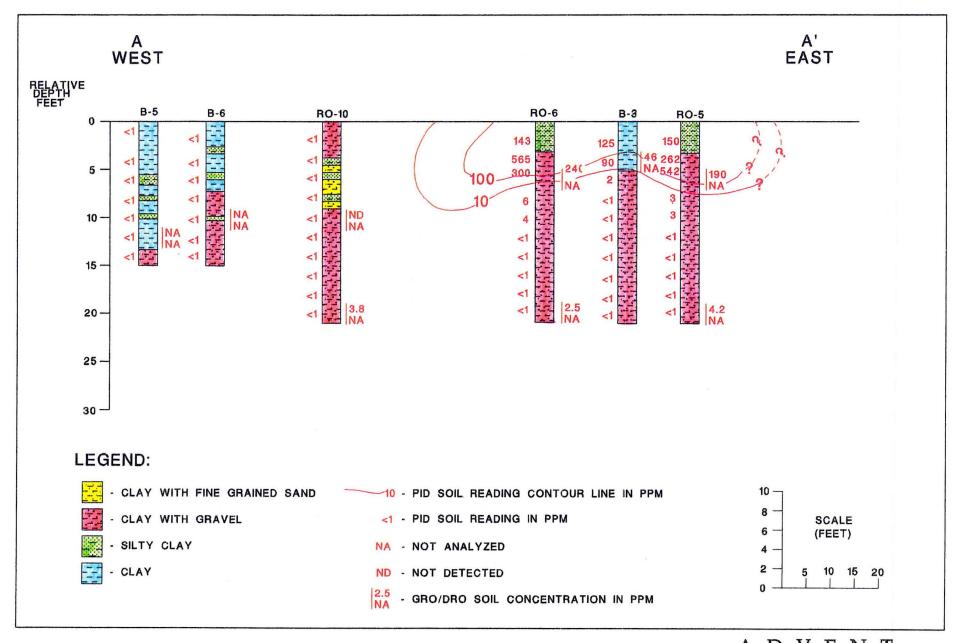


FIGURE 2-4 WEST TO EAST PEDOLOGIC CROSS-SECTION A-A' 37th AND VILLARD MILWAUKEE, WISCONSIN

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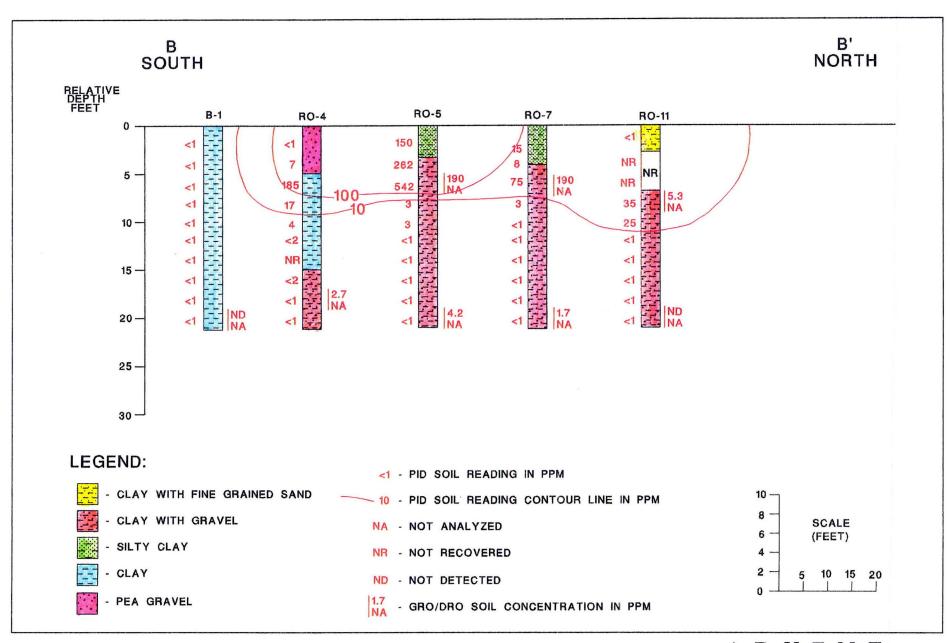


FIGURE 2-5 SOUTH TO NORTH PEDOLOGIC CROSS-SECTION B-B'
37th AND VILLARD
MILWAUKEE, WISCONSIN

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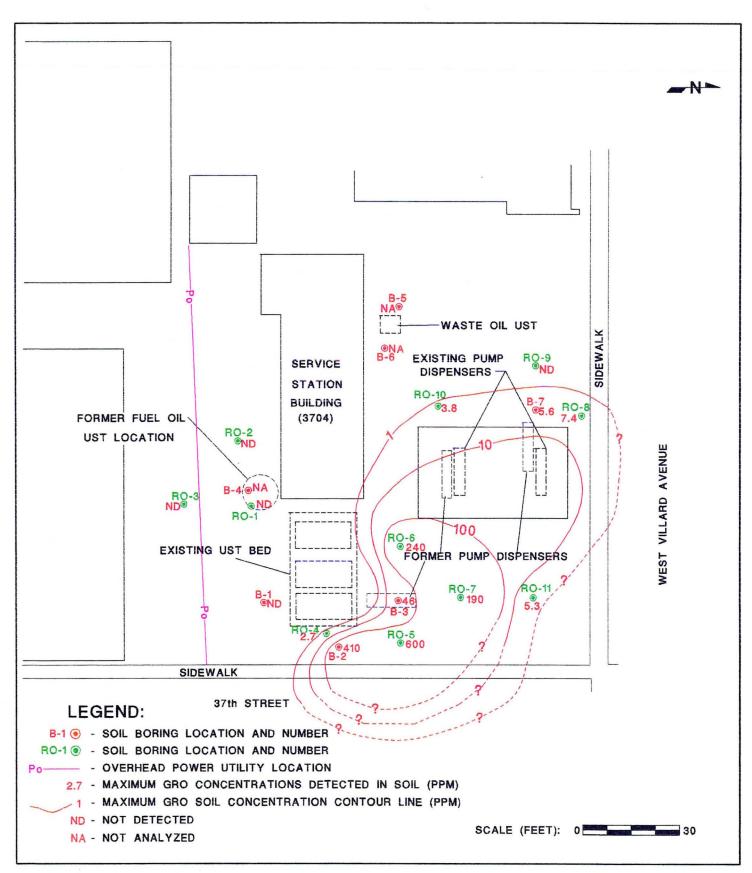


FIGURE 2-6 EXTENT OF GRO
CONTAMINATED SOIL (PPM)
37th AND VILLARD
MILWAUKEE, WISCONSIN

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ENVIRONMENTAL SERVICES, INC. DATE: 6/7/93 DRAWING # 96804CE

Table 2-3 Roettgers Oil Site Results of Chemical Analyses of Soil Samples Dates Analyzed: 4/7/93-4/14/93

Sample	Date	Depth	PID	GROs	DROs	Total Lead				PVOCs(ppb)			
Number	Collected	Collected	(ppm)	(ppm)	(ppm)	(ppm)	Benzene	Ethyl- benzene	Methyl-t- butyl-ether	Toluene	1,2,4 Tri- methyl- benzene	1,3,5 Tri- methyl- benzene	Xylene
ROS-1A	3/29/93	31-33	<1	NA	ND	NA	DИ	ND	ND	ND	ND	ND	ND
ROS-1B	3/29/93	49-51	<1	NA	ND	13	ND	10	ND	ND	ND	ND	ND
ROS-1C	3/29/93	9-11	<1	NA	ND	NA	ND	ND	ND	5.6	ND	18	ND
ROS-2A	3/29/93	15-17	<1	NA	ND	20	ND	6	ND	13	ND	ND	ND
ROS-2B	3/29/93	23-25	<1	NA	ND	NA	ND	7.8	ND	7.5	ND	ND	ND
ROS-3A	3/30/93	9-11	<2	NA	ND	20	ND	ИD	. ND	2.6	ND	ND	ND
ROS-3B	3/30/93	17-19	<2	NA	ND	NA	ND	ND	ND	3.4	ND	ND	ND
ROS-4A	3/30/93	17-19	<1	2.7	NA	20	ND	ND	ND	14	20	ND	ND
ROS-5A	3/30/93	5-7	542	190	NA	16	370	4,900	ND	ND	14,000	4,000	7,900
ROS-5A duplicate	3/30/93	5-7	542	600	NA	NA	NA	NA	NA	NA	NA	NA	NA
ROS-5B	3/30/93	19-21	<1	4.2	NA	NA	ND	17	ND	ND	ND	ND	ND
ROS-6A	3/30/93	5-7	300	240	NA	20	430	4,300	ND	490	12,000	3,400	15,000
ROS-6B	3/30/93	19-21	<1	2.5	NA	NA	ND	11	ND	7.1	ND	ND	ND
Fuel Oil (F.O.)	3/30/93			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2-3 (continued) Roettgers Oil Site Results of Chemical Analyses of Soil Samples Dates Analyzed: 4/7/93-4/14/93

Sample	Date	Depth	PID	GROs	DROs	Total Lead				PVOCs(ppt	o) .		
Number	Collected	Collected	(ppm)	(ppm)	(ppm)	(ppm)	Benzene	Ethyl- benzene	Methyl-t- butyl-ether	Toluene	1,2,4 Tri- methyl- benzene	1,3,5 Tri- methyl- benzene	Xylene
ROS-7A	4/1/93	5-7	75	190	NA	24	200	620	ND	120	8,300	1,400	3,100
ROS-7B	4/1/93	19-21	<1	1.7	NA	NA	ND	28	ND	9.3	37	23	ND
ROS-8B-A	4/1/93	9-11	<1	7.4	NA	23	ND	11	ND	14	26	34	ND
ROS-8B-B	4/1/93	19-21	<1	2.2	NA	NA	ND	12	ND	6.5	25	15	ND
ROS-9A	4/1/93	9-11	<1	ND	NA	18	ND	ND	ND	9.6	ND	ND	ND
ROS-9B	4/1/93	19-21	<1	ND	NA	NA	ND	ND	ND	11	ND	ND	7.5
ROS-10A	4/2/93	9-11	<1	ND	АИ	19	ND	ND	ND	8	ND	ND	ND
ROS-10B	4/2/93	19-21	<1	3.8	NA	NA	ND	15	ND	ND	16	ND	ND
ROS-11A	4/2/93	7-9	35	5.3	NA	26	190	1,400	ND	120	4,900	ND	1,600
ROS-11B	4/2/93	19-21	<1	ND	NA	NA	ND	18	ND	13	25	ND	ND
ROS-8B-B duplicate	4/1/93	19-21	<1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stockpile	4/2/93		15	3.9	NA	NA	280	4,000	91	150	7,000	ND	6,900
Methanol Blank	3/30/93			NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
LDL				1	1	1	1	1	1	1	1	1	1
RAL				10	10								

ND Not detected above laboratory detection

Laboratory Detection Limits LDL

Not Applicable or Not Analyzed NA

RAL Remedial Action Limits

Table 2-4 Roettgers Oil Site Results of Chemical Analyses of Soil Samples for Disposal Parameters Date Analyzed 4/6/93 Sample Number ROS-5A Fuel Oil Detection Limit (ppm) **Date Collected** 3/30/93 3/30/93 Depth Collected (feet) 5 - 7 from drummed soil **Analyte** TCLP Lead (ppm) 0.0085 0.013 0.005 ND ND 0.4 TCLP Benzene Method 8240 (ppm) Flash Point >200 >200 (open cup, °F) 9.6 9.8 pН paint filter pass pass specific gravity 2 3 PCBs (ppb) **PCB 1016** ND ND PCB 1221 ND ND PCB 1242 ND ND ND ND **PCB 1248** PCB 1254 ND ND PCB 1260 ND ND

95

ND Not detected above laboratory detection limits

60

LDL Laboratory Detection Limits

LDL (ppb)

Groundwater Samples

Groundwater was not encountered in any borings completed on-site; therefore, no groundwater samples were collected for laboratory analyses.

2.7 Conclusion

This section discusses field observations and analytical data pertaining to observed or potential contamination that may be attributed to the Roettgers Oil site.

Site History and Reconnaissance Inspection

The site history review revealed that petroleum products have been stored and dispensed on-site since 1965. The fuel oil UST that was located at the southeast corner site since approximately 1988 was removed in 1984. The 1,000-gallon waste oil UST installed in approximately 1968 located north of the garage is currently not in use. Four leaded gasoline USTs located on the east side of the site were removed in 1989 and were replaced with three 10,000-gallon unleaded gasoline USTs. Three pump islands were removed and replaced with two pump islands in 1989. The three 10,000-gallon unleaded gasoline USTs are currently in use.

Advent completed a Phase I environmental assessment for the Roettgers Oil site on July 7, 1992. Laboratory analysis of soil samples collected from soil borings B-2 and B-3 located in the vicinity of gasoline UST bed detected GROs at concentrations of 46 and 410 ppm, respectively. Laboratory analyses of the soil sample collected from soil boring B-4 located adjacent to the fuel oil UST bed detected DROs at a concentration of 16 ppm. The GRO and DRO concentrations detected in soil borings B-2, B-3, and B-4 exceed the 10 ppm WDILHR remedial action guideline for petroleum-impacted soil. No other sources of potential environmental contamination were identified during the site history interview and reconnaissance inspection.

Field screening of soil samples with a calibrated PID indicated the presence of VOCs in excess of background levels at the site (Figure 2-7). Results of laboratory analyses detected the presence of GROs at levels exceeding the 10 ppm remedial action guideline for petroleum-impacted soils prescribed by WDILHR. PVOCs were detected in several soil samples above laboratory detection limits. There are presently no regulated levels for PVOCs in soil. Total lead and TCLP lead were detected in all soil samples analyzed but at concentrations below levels that are considered to have the potential to exceed regulated levels and within the range of naturally occurring concentrations.

The area of soil contamination generally corresponds to the location of the former and current dispenser islands, on the south and east side of the site. Results of field screening with a PID and laboratory analyses of collected soil samples suggest that the predominantly clayey soils at the Roettgers Oil site property have confined the extent of GRO contamination to within nine feet of the surface. Soil contamination appears to extend topographically downgradient to the east onto the 37th Street right-of-way (Figures 2-6 and 2-7). Negotiations with the city of Milwaukee to obtain permission to complete borings within the 37th Street right-of-way to determine the inferred downgradient extent of GRO contamination were unsuccessful. The data collected to date suggest that approximately 1,230 cubic yards (1,845 tons) of petroleum-impacted soil is present on the Roettgers Oil property. The extent of the impacted soil under 37th Street has not been defined.

Groundwater

Groundwater was not encountered in any of the soil borings that were completed to a maximum depth of 51 feet. Well logs obtained from the Wisconsin Geological and Natural History Survey (WGNHS) indicate that groundwater occurs at depths of 75 to 85 feet. Results of field screening and laboratory analysis of collected soil samples suggest that the significantly impacted soils are localized to within nine feet of the surface. The clay character of the soils (typically low permeability), the demonstrated depth to groundwater (greater than 51 feet), and the demonstrated vertical extent of impacted soils (approximately nine feet) suggest that it is unlikely that groundwater has been impacted by petroleum products from this site.

2.8 Recommendations

Advent recommends that the petroleum-impacted soils at the Roettgers Oil site be treated by the most cost-effective technology available. Based on field observations and analytical results of soil collected at the Roettgers Oil site, current technologies that may be appropriate include: active in-situ soil venting, excavation with thermal treatment, or excavation and landfilling at a WDNR-approved facility.

Based on similar sites, Advent believes that excavation and landfill disposal will likely be the most efficient strategy that can be developed and implemented to remediate the petroleum-impacted soil at the Roettgers Oil site. The data collected to date suggest that significantly impacted soil is limited to the clays and silty clays present from the surface to approximately nine feet below ground surface. The demonstrated vertical extent of impacted soil suggests that groundwater has not been impacted at the site.

If excavation and landfill disposal is the approved remediation option, an estimated 1,400 cubic yards (approximately 2,240 tons) of impacted soil will be removed and transported to a WDNR approved landfill for disposal. Impacted soil beneath 37th Street and Villard Avenue that cannot be removed by standard excavation methods is capped by pavement and does not pose a significant threat to human health and safety. The impermeable nature of the native clay soils at the site will likely impede further migration of contaminants since the source and the most heavily contaminated soil will have been removed. Impacted soil beneath 37th Street and Villard Avenue will be further isolated by installing an impermeable membrane along the east and north walls of the excavation prior to backfilling.

Active or passive bioremediation does not appear to be a likely candidate for successful remediation due to the predominance of clay material at the site.

Remediation of the soil by soil venting is likely not practical due to the impervious nature of the soils that will limit the vacuum radius of influence resulting in a remediation system design likely to require a level of effort that will make soil venting economically undesirable for this site.

At the client's request, Advent will prepare a detailed cost comparison of alternative remediation technologies as required by ILHR 47 to ensure selection of the most cost-effective remediation strategy and maintain the client's eligibility for reimbursement under the Petroleum Environmental Cleanup Fund Act (PECFA).

APPENDICES

APPENDIX A LETTER REPORT TO WDNR



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

George E., Secretary Box 12436 Milwaukee, Wisconsin 53212 TELEFAX NO. 414-961-2770

March 2, 1993

File Ref: 4440-3040
County: Milwaukee

Mr. Don Roettgers 5169 North 37th Street Milwaukee, WI 53209

Dear Mr. Roettgers:

RE: Roettger's Oil Company - 5149 North 37th Street, Milwaukee, WI

Wisconsin Department of Natural Resources (WDNR) has been notified that petroleum contamination was discovered January 24, 1993 at the above referenced location. Based on the site specific information provided, this case has been assigned to the <u>Medium Priority Rank</u> group. The purpose of this letter is to inform you of your legal responsibilities to address this situation.

Releases from underground storage tanks regulated under Subtitle I of the Resource Conservation and Recovery Act require compliance with the provisions of 40 CFR Parts 280 and 281. The Environmental Protection Agency (EPA) has the authority to take enforcement action at any time, but will generally not take action against parties cooperating with the state. The WDNR proceeds in LUST cases under the authority of s. 144.76, Wisconsin Statutes, commonly referred to as Wisconsin's Hazardous Substance Spill Law. The definition of "hazardous substance" as found in s. 144.01(4m), Wisconsin Statutes, includes petroleum products.

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempted under sub.(9)."

Wisconsin Statute 144.76(3) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

Because you possess or control a hazardous substance which has been released to the environment, the Department identifies you as the party responsible for taking the actions necessary to restore the environment. You are required to:

- Immediately notify the WDNR Spills Hotline at (414) 263-8491 should emergency conditions involving explosive vapors and/or well contamination develop.
- Conduct an investigation to determine the extent of soil and groundwater contamination.
- 3. Remediate all of the environmental impacts caused by this situation.
- 4. Sample private water supply wells which may have been impacted by the release.

The Department suggests that you have a qualified environmental engineer or hydrogeologist direct the remedial investigation, assess the environmental impact, and coordinate the implementation of a cleanup program. Within 15 days of receiving this letter, you should provide the WDNR with the date the remedial investigation will begin.

The Department requires that the location of the tank and/or release be submitted with the work plan. Requirements for location are Latitude, Longitude, 1/4, 1/4, Township, and Range (east or west).

Final documentation of the investigation and cleanup should be prepared according to the guidance enclosed and sent to this office on completion of compliance with all applicable federal, state and local laws and regulations. Remedial actions must adequately cleanup contaminated soil and/or groundwater to current WDNR guidelines and/or standards. All product, soil, wastewater, and sludge must be disposed of in compliance with all applicable federal, state and local laws and regulations. Because the Department is experiencing a backlog of leaking underground storage tank cases of emergency status and your case is not currently ranked as an emergency, your submittals will be reviewed as time permits. Investigation and cleanup should not, however, be delayed pending WDNR review of your case.

The WDNR requests that concise LUST project updates be submitted every six months for all medium priority sites; biannual updates will enable WDNR project managers to monitor the status of remedial investigations and/or corrective actions on projects which are not under direct WDNR oversight.

You are encouraged to contact the Department of Industry, Labor, and Human Relations (DILHR), the state agency that administers the Petroleum Environmental Cleanup Fund (PECFA). This fund may reimburse you for eligible costs associated with the remedial investigation and cleanup. DILHR should be contacted at (608) 267-4545 to obtain current information regarding the PECFA program.

Please be aware that your ability to utilize PECFA funds will be dependent on your cooperation in adequately addressing this problem.

Sincerely,

Livelle Alleg

Program Assistant, Environmental Repair Section

Enclosures: Remedial Investigation Checklist

c: Advent Environmental SED Case File

ADVENT

ENVIRONMENTAL SERVICES, INC.

August 14, 1992

Mr. Scott Fleming Weiss, Berzowski, Brady, and Donahue 700 North Water Street Milwaukee, WI 53202-4273

Dear Mr. Fleming:

Subject: 37th and Villard Environmental Assessment

On July 7, 1992, Advent Environmental Services, Inc. (AESI) completed seven soil borings at depths ranging between 11 and 21 feet at the 37th and Villard site (see Figure 1). Soil samples were collected from the soil borings at locations selected by AESI personnel to determine the status of soils adjacent to three active gasoline underground storage tanks (USTs), one former 1,000-gallon fuel oil UST, one 500-gallon drain oil UST, three former pump islands, and two active pump islands (see Figure 2 for soil boring locations.) Soil sample collection and field screening procedures are included in Appendix A. Soil boring logs and soil descriptions are included in Appendix B. Copies of laboratory analytical data are included in Appendix C.

The field and laboratory results are summarized as follows:

- Boring B-1: B-1 was located approximately 8 feet south of the UST bed containing three active gasoline USTs. Boring B-1 was continuously sampled from the 5 to 21 foot depth interval. Field screening of soil samples with a photoionization detector (PID) did not reveal any readings above background levels (0 parts per million [ppm]). Laboratory analysis of soil sample BS-1 collected at the 19 to 21 foot depth interval did not reveal any GROs above the 5.0 mg/kg (ppm) laboratory detection limit.
- Boring B-2: B-2 was located approximately 6 feet east of the UST bed containing three active gasoline USTs. Boring B-2 was continuously sampled from the 5 to 21 foot depth interval. Field screening of soil samples with a PID revealed readings of 120, 25, and <1 ppm in the 5 to 7, 7 to 9, and 9 to 11 foot depth intervals, respectively. Laboratory analysis of soil sample BS-2 collected from the 5 to 7 foot depth interval revealed GROs at a concentration of 410 mg/kg (ppm).

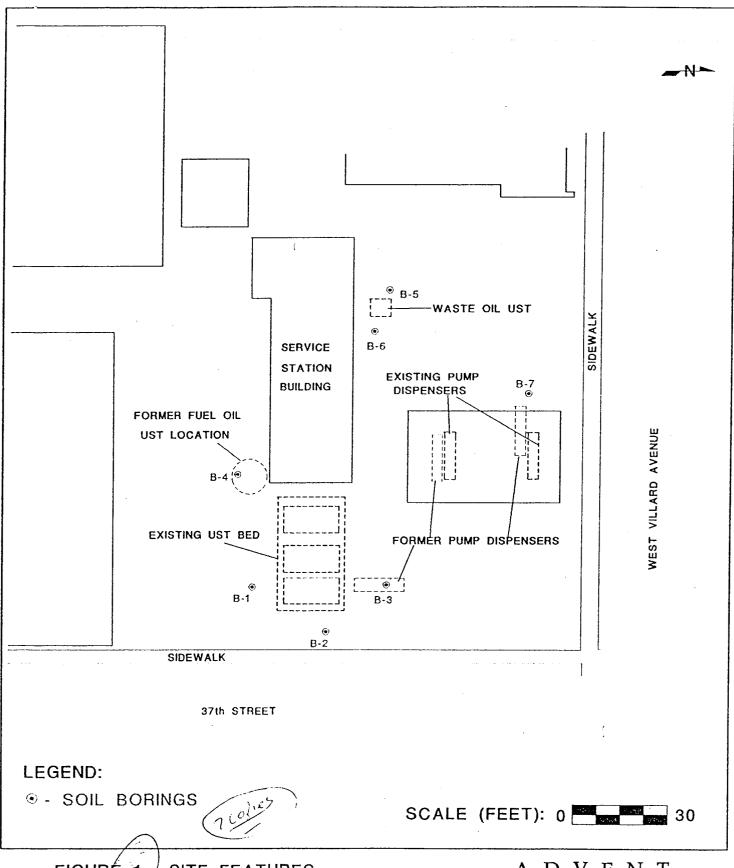


FIGURE 1 SITE FEATURES

37th AND VILLARD

MILWAUKEE, WISCONSIN

A D V E N T

ENVIRONMENTAL SERVICES, INC. DATE: 8/10/92 DRAWING # 96804CA

- Boring B-3: B-3 was located approximately 12 feet north of the UST bed containing the three gasoline USTs and directly on the location of a former pump island. Boring B-3 was continuously sampled from the 3 to 21 foot depth interval. Field screening of soil samples with a PID revealed readings of 125, 40, and 2 ppm in the 3 to 5, 5 to 7, and 7 to 9 foot depth intervals, respectively. Laboratory analysis of soil sample BS-3 collected from the 3 to 5 foot depth interval revealed GROs at a concentration of 46 mg/kg (ppm).
- Boring B-4: B-4 was located approximately 10 feet south of the southeast corner of the service station building near the location of the former fuel oil UST. Boring B-4 was continuously sampled from the 3 to 17 foot depth interval. Field screening of soil samples with a PID did not reveal any readings above background levels (0 ppm). Laboratory analysis of soil sample BS-4 collected in the 15 to 17 foot depth interval revealed a DRO concentration of 16 mg/kg (ppm).
- Boring B-5: Boring B-5 was located on the west side of the site and west of the existing waste oil UST. Boring B-5 was continuously sampled from the 3 to 15 foot depth interval. Field screening of soil samples with a PID did not reveal any readings above background levels (0 ppm). Laboratory analysis of soil sample BS-5 collected at the 11 to 13 foot depth interval did not reveal any total recoverable petroleum hydrocarbons (TRPHs) above the 5.0 laboratory detection limit.
- Boring B-6: B-6 was located on the west side of the site, east of the existing waste oil UST. Boring B-6 was continuously sampled from the 3 to 15 foot depth interval. Field screening of soil samples with a PID did not reveal readings above background levels (0 ppm). Laboratory analysis of soil sample BS-6 collected at the 9 to 11 foot depth interval did not reveal any TRPHs above the 5.0 laboratory detection limit.
- Boring B:7 was located west of the existing pump islands. Boring B-7 was continuously sampled from the 1 to 11 foot depth interval. Field screening with a PID did not reveal any readings above background levels (0 ppm). Laboratory analysis of soil sample BS-7 collected at the 9 to 11 foot depth interval revealed GROs at a concentration of 5.6 mg/kg (ppm).

Table 1 shows the results of laboratory analyses and field screening for each soil sample.

		Tabl	e 1		
	Results o	f Laboratory Anal	yses and Field	Screening	
Sample	Depth (feet)	PID Reading (ppm)	GROs (mg/kg)	DROs (mg/kg)	TRPHs (ppm)
BS-1	19 - 21	0	ND	NA	NA
BS-2	5 - 7	120	410	NA	NA
BS-3	3 - 5	125	46	NA	NA
BS-4	15 - 17	0	NA	16	NA
BS-5	11 - 13	0	NA	NA	ND
BS-6	9 - 11	0	NA	NA	ND
BS-7	9 - 11	0	5.6	NA	NA
Laboratory Detection Limits			5.0	5.0	5.0

ND Not detected above laboratory detection limits

NA Not analyzed

Mr. Scott Fleming Page Four

DISCUSSION

Based upon the results of laboratory analyses and field screening, petroleum-contaminated soil was identified in soil borings B-2 and B-3 near the three active gasoline USTs. The contamination was detected in the 5 to 11 foot depth interval and may also exist in the interval from 5 feet to the ground surface that was not field screened.

Petroleum contamination was also identified by laboratory analysis in boring B-4 near the former fuel oil UST location; no PID readings were observed in this boring. No indication of waste oil contamination was found near the waste oil UST in the areas investigated. No PID readings or TRPHs were detected in borings B-5 or B-6. Petroleum contamination was also identified by laboratory analysis in boring B-7 near a former and active pump dispenser; no PID readings were indicated in this boring.

RECOMMENDATIONS

AESI recommends that the owner of the site be informed of the petroleum contamination identified in order to comply with Wisconsin Statutes 144.76(2a) and 144.76(3).

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempted under sub. (9)."

Wisconsin Statute 144.76(3) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

AESI also recommends that additional soil borings and soil sampling be completed at the site according to Wisconsin Department of Natural Resources (WDNR) Leaking Underground Storage Tank (LUST) guidance to define the horizontal and vertical extent of contaminants identified.

If you have any questions or concerns, please do not hesitate to call at 238-1998.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

andall S. Ad

Randall S. Igel

Environmental Specialist

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		<u> 1-</u>	1/2	13/11/	<u> </u>	Wie Crass	Com	pletion	of this	renor	is mer	daton	y. Pen:	altics:	Forfci	not le		

[≡] form is authorized by Chapters 144.147 and 162. Wis. Stats. Completion of this report is mandatory. Penaltics: Forfeit not less \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or the for each violation. Each day of continued violation is a separate offense, pursuant to \$5,144.99 and 162.06. Wis. Stats.

APPENDIX B SITE PHOTOGRAPHS

SITE NAME: Roettgers Oil (96804)

PAGE 1 OF 4

DATE: 4/1/93

TIME: 10:30 am

DIRECTION OF PHOTOGRAPH:

southwest

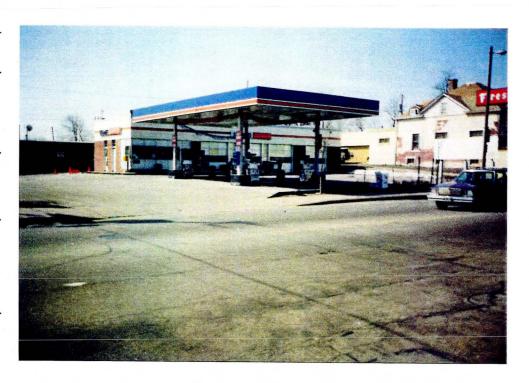
WEATHER CONDITIONS:

partly cloudy

29°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Roettgers Oil site, 3709 W. Villard Ave.

DATE: 4/1/93

TIME: 10:30 am

DIRECTION OF PHOTOGRAPH:

southeast

WEATHER CONDITIONS:

partly cloudy

29°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Roettgers Oil site, 3709 W. Villard Ave.

SITE NAME: Roettgers Oil (96804)

PAGE 2 OF 4

DATE: 4/1/93

TIME: 10:45 am

DIRECTION OF PHOTOGRAPH:

northwest

WEATHER CONDITIONS:

partly cloudy

29°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Roettqers Oil site. Orange cones indicate locations of soil borings
B-4, RO-1, RO-2, and RO-3. Drummed contaminated soil cuttings are located against
south wall of building.

DATE: 4/1/93

TIME: 10:45 am

DIRECTION OF PHOTOGRAPH:

southwest

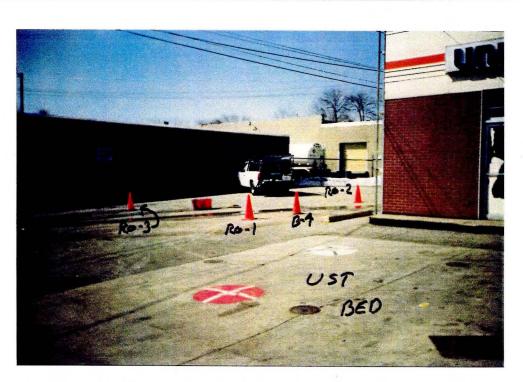
WEATHER CONDITIONS:

partly cloudy

29°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Orange cones indicate locations of soil borings B-4, RO-1, RO-2, and RO-3.

SITE NAME: Roettgers Oil (96804)

PAGE 3 OF 4

DATE: 4/1/93

TIME: 11:00 am

DIRECTION OF PHOTOGRAPH:

southwest

WEATHER CONDITIONS:

partly cloudy

29°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Orange cone indicates location of soil boring RO-6 just north of gasoline UST bed.

DATE: 4/1/93

TIME: 11:00 am

DIRECTION OF PHOTOGRAPH:

north

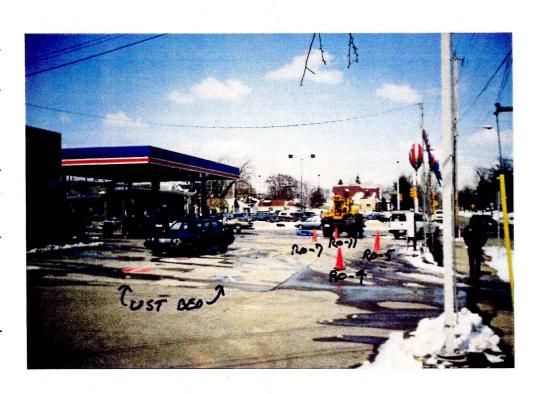
WEATHER CONDITIONS:

partly cloudy

34°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Orange cones indicate locations of soil borings RO-4, RO-5, RO-7, and RO-11.

SITE NAME: Roettgers Oil (96804)

PAGE 4 OF 4

DATE: 4/1/93

TIME: 11:15 am

DIRECTION OF PHOTOGRAPH:

southeast

WEATHER CONDITIONS:

partly cloudy

34°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Orange cone indicate locations of soil borings B-7, RO-8, RO-9, and RO-10.

DATE: 4/1/93

TIME: 11:15 am

DIRECTION OF PHOTOGRAPH:

southeast

WEATHER CONDITIONS:

partly cloudy

34°F

PHOTOGRAPHED BY:

Stephen G. Reuter



DESCRIPTION: Orange cones indicate locations of soil borings RO-5, RO-8, RO-9, RO-10, and B-7.

APPENDIX C

WISCONSIN GEOLOGIC AND NATURAL HISTORY SURVEY GEOLOGIC WELLS AND WELL CONSTRUCTOR'S REPORTS

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

ZHVIA GA	TEUR AACE	MARC 13 AUGST	HIV VO JIVLOV	MATICAL DUF	ACTU 1	<u> </u>
1. County	melw	udel	Town	y same	ull	
	/11	المناه المناه المناسبة المناسبة المناسبة	City			
2. Location	4899	7. 49th	Shut	LSE SESON	35781	RZIE
3. Owner or Ag	ent	acoli o C	Briedle	i kara sistela Ai 1800 in	्राच्या हैता है. जारकार है	1. Nove
4. Address	4899 2	· 49th- 1	trut			ouring
5. From well to	nearest: Buildi		er_li_http://erain.	ft: sen	tic tank	ft:
		ft; abandoned well	the second secon			Hist N
6. Well is intend	led to supply wa	ter for:	inte 1	rome		ewa
7. DRILLHOLE		. ** ** .	10. FORMATION	IS:	l Thick-	Total
10	٠,٧	10	Kind		ness (ft.)	Depth (ft.)
			Jellow C	luy	12	12
			Blue	110	30	42
			sand of fig	ed from	10	52
8. CASING AND	D LINER PIPE	OR CURBING:	Zen-e	wet	33	8.5
Dia. (in.)	Kind	(ft.) (ft.)			· -	
6 stantos	ed Weistel					
Ste	elpin	0 53-				
						·
9. GROUT:		From To				
Pertil	chis	0 9.0				
			• • • • • • • •			
11. MISCELLANI	FOUR DATA	. "	· –			
Yield test:3		GPM.	Construction of th	ne well was con	npleted or	n
Depth from surface				104 12-		
	-	7 2		144C4		inches
Water-level when	pumping:	ft.	(above) (b olow) was the well disi	-	<u>.</u> .	· · · · · · · · · · · · · · · · · ·
Water sample sen	The second of the second		- Will the well that		No.	
·	on May.	13 19 45	Was the well seal			
<u> </u>	, · /			Yes	No.	
Signature Ud	rian lla	bel	·	Villas		2.9
Reg	istered Well Drille	r	Со	mplete Mail Ado	iress	

WELL LOG and REPORT

n this column indicate the kind of casing, liner, shoe and other accessories used.	WELL DIAGRAM Use a red line to show casing or liner pipe. Use black for drill or borehole.	In this column state the kind of formations penetrated, their thickness in feet and if water bearing.	Record of FINAL Pumping test
Special Med rillers Fine	Inches Diameter 2 3 4 5 6 8 10 12 14 16 18 Depth	Blue Clay	Duration of test Hours
rellessige rog Jorgel	25	Stoney Clay 2 1	Pumping rate G.P.M/
teel drive	72' 3 441	Story Clay	Depth of pump in well. Ft. 3.3
■ . 	7/	stoney clay?	Standing water-level (from surface) Ft3
- Drillholl	76	13' Hard par	Water-level when pumping Ft
3- mulgaret	100	Jemerock 10' mater bearing	Water. End of test. Clear Cloudy Turbid
- Casing	150		Was the well sterilized? Yes No
	200	·	To which laboratory was sample sent? Date
	400		Was the well sealed on completion? Yes
	900		How high did you leave the casing-pipe above grade?
	800		Well was completed Date 1939
	Draw the diagram to show the right half only		Well Priller Lacker Signature

WELL CONSTRUCTION REPORT

WISCONSIN STATE BOARD OF HEALTH

WELL CONSTRUCTION DIVISION

NOV -5 1941

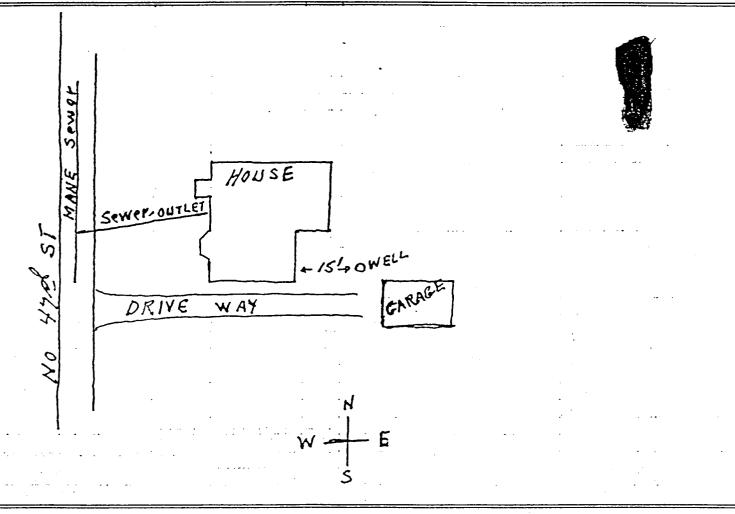
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Moman Poff Driller T. W. Garth & Somm

Street or RFD 5050 Mo 4736 Milliam Post Office Caldarbin G. Whis.

Post Office Milliam Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of construction to the State Board of Health on a form provided by the Board of William Scott Complete Caldarbin G. William Complete Construction to the State Board of Health on a form provided by the Board of William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William Complete Caldarbin G. William C. William Complete Caldarbin G. William C.

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



County W	LW T	wn /VV	w.	Sec	SENE Sec 3	·s ⁻ /
County		(Office	Record—Do not fill	in)		
	T.8N.	R.21E]				

TO THE WISCONSIN STATE BOARD OF HEALTH, WELL DRILLING DIVISION, MADISON, WIS.

WELL LOG PREMISES DIAGRAM, and REPORT

WELL LUG				and REI ORI
			ord of the Board	
Peter Da	(10 BE (DZED FOR IL	HAT PURPOSE ONLY)	Tunb + Th DO Co
OWNET (If a joint ownership give name of responsabilities an interest. Use a separate sheet	ble official. Also nam and attach hereto.)	se of each individual	02013	Greenfield as.
At 10.	_		Address 750 V	allis Nos
Address (Otty, village, to	wnship, sounty)		Date of Report	11-10 1937
Melwanke			Registration	No. 37
Give below the location of the	property on wh	ich well is dril	1ed. N 47th -	Rohy av.
If incorporated village or city:		Lot	Bik.	Street and No.
If Lake Shore Plat	Name	Coun		
If Farm	/ Plet	Lake	Lot Sec.	Bik. Street Highway
If School		Twp.	Sec.	District
If other public building	Kind	County	Twp,	£•c.
Miscellaneous	Kind	County	Twp.	B+c.
	WELL	LOG :	and REPOF	<u> </u>
Kind of casing and liner in feet. Kind of shoe, Indicate grout,	WELL DI Vertical Lines		Give depth of formation State if dry or water	hearing
screen, seal, etc.	Horizontal Line	s = ft. Depth	June II day of water	Pumping Test
5" Kell Driller		10 12 14 16 18 24	0-1- Black &	
Special Steel Pope	- HWH	111111	1-31 - Red Dan	Ay clay Duration of test. Hours 4
11-2-1				
5" Steel Forged				Pumping Rate.
Show			31-Gray Clas	G. P. M. 12-
no liner used			50	Depth of pump in well.
				Ft. X1-17.8.
annular space	<u> </u>	50	50-61 Proy Da	Standing water-level
filled with puch			clay	(from surface.) Ft. 25
' · · · · · · · · · · · · · · · · · · ·			61-80 Gray el	ц .
dley clay and	,,			Water level when pumping
trilled cuttings		TITTE	80-80'-8" Gray	o auty
			5019"-50"10" gra	wel Water. End of test. Check:
			saus solid le	meston Cloudy
	100	100		Turbid
لِ ا				Was well sterilized before
		11111	103 ft.	test?
	150	150		Och Date 11-
			Chine III.	4
		+++++		To which Laboratory was sample sent?
			1	Kensoha
	200	200	10	Date
			Jawung 1	Was the well scaled on completion?
			•	Yes No
	400	400		How high did you leave
-				casing above grade?
		+++++		
·		800		Well was completed
	-600	1 1 1 1 800	1	19.22
•				Well Driller: Baley
				Signature.
	1200	1200		(Be sure to complete the report on the reverse side)
			,	

WELL CONSTRUCTION REPORT

WISCONSIN STATE BOARD OF HEALTH

WELL CONSTRUCTION DIVISION

MAR 7 1514

Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board. Post Office LOCATION OF PREMISES The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section. SENE, Describe further by subdivision, plat, district, lake, lot. Twp. North block, nearest principal highway, etc., whichever apply. DIAGRAM OF PREMISES See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

See Instructions on Reverse Side 1947 Town 3. Owner or Agent USENES 35 TENEDIE 4. Address _ 5. From well to nearest: Building 15 ft; sewer 25ft; drain 35 ft; septic tank ft; dry well or filter bed_____ft; abandoned well_ 6. Well is intended to supply water for: 7. DRILLHOLE OR EXCAVATION: 10. FORMATIONS: Thickness (ft.) Depth (ft.) Kind 8. CASING AND LINER PIPE OR CURBING: Dia. (in.) From (ft.) To (ft.) 9. GROUT: Kind 11. MISCELLANEOUS DATA: Yield test: _____ Hrs. at _____ GPM. Construction of the well was completed on _____ 1950 22 1946 Depth from surface to water: ____ft. The well is terminated _. Water-level when pumping: ____ft. (above) (below) the permanent grade. Was the well disinfected upon completion? Water sample sent to laboratory at Yes__ Was the well sealed watertight upon completion? Signature Lidri Registered Well Driller Complete Mail Address

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTHOLT 14 1946 See Instructions on Reverse Side

92773 4			•	THULAS TO SUBSECT OF HE		<i></i>
1. County Mi	owaukee			Town /yille/ of Granville Ony		
2. Location	5354-N- 47	Street	NWS	ENES 25 TON RZIE		
				8412 For 1,1407 47 2 1, 50 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	- 1 · <u>12</u> · 4	: <u> </u>
				Milwaukee 1	Sagren e e - S. I. S. S. S. S. S. S. S. S. S. S. S. S. S. S	aki i Sistem
5. From well t	to nearest: Bui	ding1	్: 5ft; sew	ver65_ft; drain15ft; sep	otic tan ln C	neft;
•	nded to supply					
7. DRILLHOI	E OR EXCAV	ATION:		10. FORMATIONS:		
Dia. (in.)	From (ft.)		o (ft.)	Kind	Thick- ness (ft.)	Total Depth (ft.)
10	0		30	Top soil and stoney		30
6	30	 1	40	Blue clay	30	80
				Hardpan	80	87
O CACINIC AT	ND LINER PIP	 E OP CIT	PRING.	Top rock	87	90
Dia. (in.)	Kind	From (ft.)	To (ft.)	Lime rock	90	140
	Steel Pip	e 0	90			
9. GROUT:						
KI	nd	From (ft.)	To (ft.)			
Puddled cl	ay	0	30			
<u> </u>						
					-[
11. MISCELLA	NEOUS DATA	:				
Yield test:	4 Hrs. a	t12.	GPM.	Construction of the well was co		
Depth from sur	face to water: _	25	ft.	August 17,		19_46
	en pumping:			The well is terminated(above) (below) the permaner	6 nt grade.	_ inches
Water sample sent to laboratory at				Was the well disinfected upon		
	on Aug		19 46		X No.	
	VII 15/4 (D)		_ ~~	Was the well sealed watertight	X No.	
Signature Z	Registered Well Dr	Jac	cks	6993-N- Green Bay Ave	enne	
r	regreemen Hell Di	77161	. ,	Milwaukee (9) Wiscons		

	nie in Gro	, ,			Town C	• //	
1. Cour	nty	yell	une	ed Elle	Village Ed M	molle	
0 7	ation	5331	5 7.	47	NWSE NESO35	5TEN ROJE	
		_	: ::/	1		•	J
	er or Agen	The Market Control	s Pell	SIL	Ca phyl Bobballic Con	<u>/</u>	
.4. Add	ress	53,35	- Z:	42			
K From	but to no	earest: Rui	lding /	ft: sev	vero25 ft; drain 35 ft	: sentic tank	f
	well or filte			4.4		,	
-				· January	/	nee	
	is intended		. :	i\		LATE TOWN	
	LLHOLE (R EXCAV	ATION:	ro (ft.)	10. FORMATIONS:	Thick-	Total
	//		-	20	Kind	ness (ft.)	Depth (ft.)
					Too Si	15	15
			-		William of	15	20
			_		130.0 nl1		2
			_		2/1	در م	
8. CAS	ING AND		From	RBING:	- Agringia	1 12	9
(in.)	K	ind	(It.)	((t.)	denter	6) /2	
6		eel	-	85			
		·····					
		·					ļ
			ļ				
9. GRC	UT:		ł From	ı To			
	Kind		From (ft.)	To (ft.)			
ude	Thee!	Clay	0	20			ļ
		· John					
				<u> </u>			
	~~~~						•
	CELLANE	Hrs. a		2 cm	Construction of the well we		
Yield tes	It:	iirs. a	b	GFIVI.	Construction of the well wa	as completed o	
Depth fr	om surface	to water: _		f ft.	The well is terminated		inche
Water-le	vel when p	ımping:	يجر	2 ft.	(above) (below) the perm	anent grade.	ment
			 		Was the well disinfected u	ipon completic	on?
water s	ample sent	مبر - · · (	•	 	<b>Y</b> e	No	)
121-1	Edler	ejon M.	ay).	2 1927	Was the well sealed water		
<i>*</i>	_	ž		<i>.</i>	Ye	No. No.	)
		7.	15 1		" - Dul A. 71	an.	/ -

### WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

	, Dec Missi de l'institution	- · · ·	<b>-</b>				
	1. County MILWAUKEE	Town X GRANVILL	TEC	PETVE			
	2. Location 43 RD & CUSTER	City Check one and	give name	V 10 V F			
	Name of street and number of premis	se or Section. Town and Range numbers	) <b></b>	こっしょいかって			
	3. Owner 2 or Agent GRECOR	PICHLER	SAN	REAU- ENG.			
	4. Mail Address NONE AS YET			· · · · · · · · · · · · · · · · · · ·			
	5. From well to nearest: Building_/5ft; sewer_	ft; drainft; septic tar	ık <i>25</i> _f	t;			
	dry well or filter bedft; abandoned well_	ft	· 				
	6. Well is intended to supply water for: _RES	ADENTS					
	7. DRILLHOLE:	10. FORMATIONS:					
	Dia. (in.) From (ft.) To (ft.) Dia. (in.) From (ft.) To (ft.)	Kind	From (ft.)	To (ft.)			
	10 0 35 6 35 193	CLAY	0	151			
		HARD PAN	151	120			
.\	8. CASING AND LINER PIPE OR CURBING:	SAND	170	176			
`` <u>`</u> `	Dia. (in.) Kind From (ft.) To (ft.)	LIME STONE	176	193			
l.l	6 STEEL PIPE 0 176						
Ò	.\						
	9. GROUT:						
	Kind From (ft.) To (ft.)						
	PUDDLED CLAY 0 35		J	<u> </u>			
	, , , , , , , , , , , , , , , , , , , ,	Construction of the well was co	mpleted o	n:			
	11. MISCELLANEOUS DATA:	JUNE	9	195/			
	Yield test: 8 Hrs. at 10 GPM.	The well is terminated		inahaa			
	,	The well is terminated inches \( \mathbb{X}\) above, below \( \mathbb{D}\) the permanent ground surface.					
	Depth from surface to water-level: -60 ft.						
	Water-level when pumping:ft.	Was the well disinfected upon	_				
	Water sample was sent to the state laboratory at:	Yes2	∠ No.				
	KENUSHA on JUNE 11 1951	Was the well sealed watertight upon completion?					
	7) E (VOS) A on QUVE 1/ 1939	Yes_X	No.				
	0:1/12/1	4654NO. 29 STREE	· 7 //:/				
	Signature Registered Well Driller	Complete Mail Add		WAUNLL			
	Please do not wri	ite in space below	1622				
	Rec'd 6-13-51 No. 0010	10 ml 10 ml 10 n		10 ml			
	Ans'd (=15.5/	Gas—24 hrs. 0 0	2 2	00			
	· 1/2	48 hrs					
	Interpretation			نـــــــ ـــــــــــــــــــــــــــــ			
	//	Confirm	<del></del>				
	ν	B. Coli					
		Examiner	S/C				

# WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

1. Cou	inty!	Milwau	kee			(Town ▼ _{Village □_	Granuille	<u>,                                      </u>	
2 Loc	eation '	4221 W	.Feir	mount.	Ave J _{NIV}	(City 🖂	Check one a	nd give name	
#. Doc	2001	N	ame of st	reet and nur	mber of premi	se or Section, Tow			1
3. Ow	ner 🔼 or	· Agent [	J	Wayne l	Krueger e of individue	l, partnership or fi		ONNENTAL	1
4. Mai	il Addre	ss4	221 W	.Fairm	ount Av	e.	ENVIR	TATION	
	•• .					idress required	15		
						7575	15ft; septic		•
					oned well_				
			supply w	rater for:	Home				
	ILLHOL   From (ft.)		u Die /in 1	From (ft.)	To (ft.)	10. FORM		From	l To
9	O O	20	Dia. (18.)	From (12)	10 ((1,)		Kind	((t.)	To (ft.)
<del></del> 6	0	129				<b>  </b>			
	.1	I				ļ	Clay	0	60
				E OR CU	JRBING:	<b></b>	gravel	30	90
Dia. (in.)		ind and Weig				<u> </u>	schell lime:	stone 9	99
_6	Blk.	D 19.4	15	0	_99	<u> </u>	imestone WB	30	129
		<del></del>			J				
9. GR									
CM	drill	<del></del>		From (ft.)	To (ft.)				
Сшад	di.TII	mua				Construction	on of the well was	completed o	n:
11 1/	HCCET I	ANEOU	C DATE			Ï	Sept. 14	_	•
	IISCELL					<b>[</b>			
Yield te	est:5	3	Hrs. at .	lo_	GPM.	1	terminated		
Depth f	rom surf	ace to w	ater-lev	el: <u>43</u>	ft.	1	elow 🗌 the perma		
				45		Was the we	ell disinfected upo	on completion	n?
			_				Yes.	X No	
	•			ate labora		Was the wo	ell sealed watertig	ght upon cor	npletion?
<u>Ker</u>	10seh City	0	n9,	/14	_ 19.53_		Yes	X No	
				19/1	Tel				<del></del>
Signatu		oer & egistered		ler / //	<u>Jaw</u>		V. Hampton Rd Complete Mail		<u>ee 16</u>
	<del></del>			// (Free	ise do not wr	te in space below	<del></del>		
Rec'd		<del></del>		No			10 ml 10 ml	10 ml 10 ml	10 ml
Ans'd						Gas—24 hrs.		<del></del>	
Interpreta	ation					48 hrs.			
<del>-</del>	·					Confirm			
		~				B. Coli			
							Examine	:r	

### WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

_1. Co	unty	nelwa	uks	L	Town Village		ange	Y (	,
SE	Sec. 36	127 /	2		(City		Check one	nd lve nan	16 A
2. Lo	cation _ 3	12/10	Name of	street and nu	mber of premi	se or Sec. Tr	and R. numb	eral	<u> </u>
	ner 🗹 or	onos arul (9) Amet 🞞 (9)	mil	1 (10)	116		N. 00	19	41
				Name	of individual,	partnership	or firm	77	72
	ant to the il Address		W	Has	enicol	ent	bas redia	N. A.	. <u>).</u>
inuntea.	izadowi ili.	n dew ti de Grands ben e	and of	'	mplete addres				بابد چاران
5. Fr	om well to	nearest: Build	ding/	4. ft; se	wer	ft; drain	ft; se	ptic tank.	6
e dry	well or fil	ter bed	_ft; aba	andoned we	11f	t			
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# APPENDIX D STANDARD SAMPLING PROCEDURES

#### SAMPLING AND FIELD SCREENING PROCEDURES

#### Introduction

This section outlines procedures followed for collecting soil and groundwater samples, maintaining security and integrity of the samples, and procedures for abandoning a borehole.

#### Sampling Procedures

Soil and groundwater samples were collected to determine if soil and groundwater at the site were contaminated.

#### Soil Sampling Procedures

Subsurface soil samples were collected with a truck-mounted rotary drill equipped with a hollow stem auger and a two-inch diameter, 24-inch split spoon sampler. The split spoon sampler was advanced at two-foot intervals by conventional methods, including the attachment of the sampler to an AW rod and standard 140 pound hammer. Adequate soil was collected and split into a sample for field screening and a sample for laboratory analysis.

All drilling tools and equipment were high-pressure steam cleaned prior to the start of sampling work. All sampling tools were also washed with an Alconox[™] and reagent water solution between sampling points to prevent cross contamination.

#### Soil Samples Submitted for Laboratory Analysis

Soil samples submitted for laboratory analysis were collected as split samples from the same location as the samples for field screening. Soil samples submitted

were transferred into the appropriate containers depending on the laboratory analysis needed.

ANALYTE	CONTAINER TYPE	FIELD PRESERVATIVE
GRO	60 ml vial	methanol
DRO	60 ml vial	none
VOC	4 oz. TLC jar	none
PVOC	4 oz. TLC jar	none
TRPH	4 oz. TLC jar	none
PAH	4 oz. TLC jar	none
PCB	4 oz. TLC jar	none
TOTAL LEAD	4 oz. TLC jar	none
TOTAL CADMIUM	4 oz. TLC jar	none
DISPOSAL PARAMETERS	4 oz. TLC jar	none

TLC = teflon lined cap

Samples were then sealed and cooled to 4°C for transport to the laboratory. All collected samples were labeled with the following information:

- Site Name
- Sample Number
- Sample Location
- Date and Time of Collection
- Analysis Requested
- Name of Sampler
- Other Applicable Information (i.e., PID readings, odors)

#### Procedures for Installation and Development of Groundwater Monitoring Wells

The groundwater monitoring wells were constructed and developed in accordance with requirements of the Wisconsin Administrative Code - Chapter NR 141.00.

#### Groundwater Sampling Procedures

Following development and purging of the permanent monitoring wells or the temporary wells, groundwater samples were collected by inserting a clean disposable polyethylene bailer into the well. The contents of the bailer were then transferred to the appropriate containers depending on the laboratory analysis needed.

ANALYTE	CONTAINER TYPE	FIELD PRESERVATIVE
GRO	40 ml vial	hydrochloric acid
DRO	1 liter amber bottle	hydrochloric acid
VOC	40 ml vial	hydrochloric acid
PVOC	40 ml vial	hydrochloric acid
TRPH	1 liter amber bottle	hydrochloric acid
PAH	1 liter amber bottle	none
PCB	1 liter amber bottle	none
TOTAL LEAD	250 ml plastic bottle	nitric acid
TOTAL CADMIUM	250 ml plastic bottle	nitric acid

Care was taken to ensure no air space was included. The water sample containers were then sealed and cooled to 4°C for transport to the laboratory. All collected samples were labeled with the following information:

- Site Name
- Sample Number
- Sample Location
- Date and Time of Collection
- Analysis Requested
- Name of Sampler
- Other Applicable Information (i.e., PID readings, odors)

#### Field Screening Procedures

Samples obtained for field screening were analyzed by a PID using the headspace procedure. Immediately after the split spoon sample tube was opened, instrumental readings (PID levels in ppm) and sample descriptions/remarks were recorded on a soil profile log at the appropriate depth intervals. Results from this screening survey were used to aid in the selection of samples for laboratory analysis. The PID calibration was checked daily with isobutylene gas and at appropriate time intervals in accordance with WDNR guidelines. The headspace procedure was conducted as follows:

- Headspace samples were collected in clean four-ounce glass jars for each site and filled half-full with the sample material.
- The mouth of the headspace jar was then covered with heavy gauge aluminum foil and sealed with the lid of the jar.
- The sample was then agitated for at least 30 seconds to break soil clods and release headspace vapors.
- When ambient air temperatures were below 70°F, the headspace samples were placed in a warm environment out of direct sunlight and allowed to equilibrate to approximately 70°F. When ambient air temperatures were above 70°F, samples were placed out of direct sunlight and allowed to equilibrate to approximately 70°F.
- Following equilibration, the sample headspace was analyzed by inserting the tip of the PID probe through a single, small hole in the foil seal to a position half-way between the seal and sample surface and then recording the highest instrument readings (benzene equivalent ppm).
- New headspace jars were used for each site. After use, the headspace jars were cleaned with an Alconox[™] and water solution and allowed to dry. If no VOC carryover was identified with a PID, the jars were reused; if VOC carryover was identified, the sample jars were discarded.

#### APPENDIX E

WDNR WELL/DRILLHOLE ABANDONMENT FORM (3300-5W) AND BOREHOLE ABANDONMENT PROCEDURES

All abandonment work shall be Admin. Code, whichever is app	•		ons of Cha	pters NR 111,	, NR 112 or NR 141, Wis.			
(I) GENERAL INFORMATION		(2) FAC	ILITY NAMI	Ε				
Well/Drillhole/Borchole Location RO-1	COUNTY MI/WAUKEE	Órigi	nal Well Out	ет (И Клочп)				
NE 1/4 of SW 1/4 of Sec.	36 : T. 8 N. R. 21 1	٠	nt Well Owne	er				
(If applicable)		Street	or Route					
Gov't Lot	Grid Number							
Grid Location		City.	State, Zip Co	ode				
ft. 🗍 N 📗 S	ft. 🗌 E. 🗍 W							
Civil Town Name		Facilit	_	nd/or Name (II A	pplicable) WI Unique Well No.			
MILWAUKEE			<u>Ro</u>	-1				
Street Address of Well			n For Abando	-				
3709 WEST VILLA	RD AYENVE		OIL TE		ing			
Ciry. Village MILWAUKEE		Date o	l Abandorime 3 –	29 -93				
VELL/DRILLHOLE/BOREHOLE								
Original Well/Drillhole/Borehole C		1,,	to Water (Fee		TR ETICOUNT ERED			
(Date)	19 -93		& Piping Ren	noved?	Yes No Not Applicable			
☐ Monitoring Well ☐ Water Well ☐ Drillhole	☐ Monitoring Well Construction Report Available? ☐ Water Well		Liner(s) Removed?  Screen Removed?  Casing Left in Place?  If No, Explain  Yes No Not Applicable Yes No Not Applicable					
■ Borehole		Was C	using Cut Off	Below Surface?	∏Y¤∏No			
Construction Type:  Drilled Driven  Other (Specify)	(Sandpoint) Dug	Did Se Did Ma	ding Material	Rise to Surface? After 24 Hours?				
Formation Type:  X Unconsolidated Formation	☐ Bedack	Con	d Method of I ductor Pipe-O np Bailer	· ==	Material Conductor Pipe-Pumped Other (Explain)			
Total Well Depth (ft.) 51 (From groundsurface)	Casing Diameter (ins.) N/A	. =	t Cement Gro	out oncrete) Grout	For monitoring wells and monitoring well boreholes only			
Casing Depth (ft.) NA		Con		-	Bentonite Pellets Granular Bentonite			
Was Well Annular Space Growted?  If Yes, To What Depth?	Yes No Unknown Feet	☐ Ben	onice-Sand SI ped Bentoniu	•	Bentonite - Cement Grout			
Sealing Materi	al Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight			
BENTOMITE Hole plus	9	Swface	51					
					. 1			
				·				
-Comments:								
Name of Person or Firm Doing Seal	as Wash	(10)	ΓΛD	DZB OB CC	OUNTY USE ONLY			
STEPILE 1 1 02-1			Receiveding		District County of the second			
Signature Proposing Work -	Date Signed AESI	Dell						
March & AN	5/27/93	Revie	wer/Inspector	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s			
Sceely Route	Telephore Number		•					
SUITE E  Tity, State, Zip Code	(414) 238-1998	Follo	- up Necessa	<b>'y</b>				

Ity, State, Zip Code

#### WELL/DRILLHOLE/BOREHOLE ABANDONMENT Form 3300-5W 11-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back. GENERAL INFORMATION (2) FACILITY NAME Original Well Owner (If Known) Well/Drillhole/Borchole MILNAUKEE Location RO-2 Present Well Owner ×Ε NE 1/4 of SW 1/4 of Sec. 36 : T. 8 N. R. 21 Street or Route (If applicable) Grid Number Gov'i Lo: City, State, Zip Code Grid Location ft. □ N □ S., ft. 🗌 E. 🔲 W. Facility Well No. and/or Name (II Applicable) Civil Town Name WI Unique Well No. MILWAUKER Ro-2 Street Address of Well Reason For Abandonment SOIL TEST 3209 WEST Boring City, Village Date of Abandonment MILWAUKEE ELL/DRILLHOLE/BOREHOLE INFORMATION (4) Depth to Water (Feet) NO WASTER ENCOUNTERED Original Well/Drillhole/Borehole Construction Completed On 3-29 Pump & Piping Removed? Yes No Not Applicable (Date) Liner(s) Removed? Yes No Not Applicable Construction Report Available? Screen Removed? Yes No Not Applicable Monitoring Well Casing Left in Place? ☑ Yes □ No Water Well If No. Explain Drillhole Soil Profile Log Borehole Was Casing Cut Off Below Surface? ∏ Yα ∏ No Did Sealing Material Rise to Surface? ∏ Yα ∏ Nο Construction Type: ☐ Dug ∑ Dilled Did Material Settle After 24 Hours?  $\prod Y \approx \prod 10$ Driven (Sancpoint) If Yes, Was Hole Retopped? Other (Specify) (5) Required Method of Placing Sealing Material Formation Type: Conductor Pipe-Gravity Conductor Pipe-Pumped ☐ Bect-ock Unconsolidated Formation Dump Bailer Other (Explain) Total Well Depth (ft.) 25 Casing Diameter (ins.) N/A (5) Sealing Materials For monitoring wells and (From groundsurface) Neat Cement Grout monitoring well boreholes only Sand-Cement (Concrete) Grout Concrete Casing Depth (ft.) Bentonite Pellets Clay-Sand Slurry 🔲 Granular Bentonite ☐ Yes ☐ No ☐ Unknown Bentonie-Sand Slurry Bentonite - Cement Grout Was Well Annular Space Growted? If Yes, To What Depth? Chipped Bentonite Fcet No. Yards, Sacks Sealant Mix Ratio or Mud Weight Sealing Material Used From (Ft.) To (Ft.) or Volume Surface BENTONITE HOLE Plug 25 Comments: Name of Person or Firm Doing Sealing Work FOR DNR OR COUNTY USE ONLY Date Received Inspected District/County : :: Reviewer/Inspector Telephone Number (414) 234-1998 Follow-up Necessary

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141. Wis. Admin. Code, whichever is applicable. Also, see instructions on back. (I) GENERAL INFORMATION (2) FACILITY NAME Original Well Owner (If Known) Well/Drillhole/Borehole MILWAUKEE Location R0-3 Present Well Owner X E NE 1/4 of SW 1/4 of Sec. 36 : T. 8 (If applicable) Street or Route Grid Number Gov't Lot City, State, Zip Code Grid Location ft. | E. | W. ft. 🗌 N. 🔲 S., Civil Town Name Facility Well No. and/or Name (II Applicable) WI Unique Well No. MILWAUKER Ro-3 Reason For Abandonment Street Address of Well SOIL TEST 3209 Date of Abandonment City, Village MILWAUKEE 3-30-93 ELL/DRILLHOLE/BOREHOLE INFORMATION (4) Depth to Water (Feet) NO WASTER ENCOUNTERED Original Well/Drillhole/Borehole Construction Completed On 3 - 30 -93 Pump & Piping Removed? Yes No Not Applicable (Date) Liner(s) Removed? ☐ Yes ☐ No ☐ Not Applicable Screen Removed? Construction Report Available? Yes Not Applicable ☐ Monitoring Well Casing Left in Place? Yes Tho ☑ Ys □ No Water Well If No. Explain Drillhole | Soil Profile Log Borehole Was Casing Cut Off Below Surface?  $\prod Y \approx \prod N_0$ Did Sealing Material Rise to Surface? TYS TN Construction Type: Yes No X Dalled ☐ Dug Did Material Settle After 24 Hours? Driven (Sandpoint) If Yes, Was Hole Retopped? ∏ Y⊠ ∏ No Other (Specify) (5) Required Method of Placing Sealing Material Formation Type: Conductor Pipe-Gravity Conductor Pipe-Pumped ☐ Bedrock Unconsolidated Formation Dump Bailer Other (Explain) Casing Diameter (ins.) N/A (5) Sealing Materials Total Well Depth (ft.) 25 For monitoring wells and (From groundsurface) Neat Cement Grout monitoring well boreholes only Sand-Cement (Concrete) Grout Concrete Casing Depth (ft.) Bentonite Pellets Clay-Sand Slurry Granular Bentonite Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown Bentonite-Sand Slurry Bentonite - Cement Grout Chipped Bentonite If Yes, To What Depth? Feet No. Yards, Sacks Sealant or Volume Mix Ratio or Mud Weight Sealing Material Used From (Ft.) To (Ft.) Surface 25 BENTONITE Hole plug Comments: Name of Person or Firm Doing Sealing Work FOR DNR OR COUNTY USE ONLY Data Received Inspected District/County.; Reviewer/Inspector (414) 238-1998 Follow-up Necessary

_All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. _Admin. Code, whichever is applicable. Also, see instructions on back.

(I) GENERAL INFORMATION	(2) FACILITY NAME
Well/Drillhole/Borehole County Location RO-4 MINAUKEE	Original Well Owner (If Known)
NE 1/4 of SW 1/4 of Sec. 36: T. 8 N. R. 21 NW	Present Well Owner
(If applicable)  Gov't Lot Grid Number	Street or Route
Grid Location	City, State, Zip Code
ft. N S., ft. E. W.	Facility Well No. and/or Name (II Applicable)   WI Unique Well No.
MINAUKEE Street Address of Well	Reason For Abandonment
3709 WEST VILLARD AVENUE	Soil TEST Boring
City, Village MI/WAUKEE	Date of Abandonment  3 - 30 - 93
VELL/DRILLHOLE/BOREHOLE INFORMATION	
Original Well/Drillhole/Borehole Construction Completed On	(4) Depth to Water (Feet) NO WASTER ENCOUNT ERED
(Date) $3 - 30 - 93$	Pump & Piping Removed? Yes No Not Applicable Liner(s) Removed? Yes No Not Applicable
Monitoring Well Construction Report Available?	Liner(s) Removed?  Yes No Not Applicable  Screen Removed?  Yes No Not Applicable
Water Well Yes No	Casing Left in Place? Yes No
Drillhole Soil Profile Log	If No, Explain
☑ Borehole	Was Casing Cut Off Below Surface? Yes No
Construction Type:	Did Sealing Material Rise to Surface? Yes No
☐ Driven (Sancpoint) ☐ Dug	Did Material Settle After 24 Hours? Yes No
Other (Specify)	If Yes, Was Hole Retopped? Yes No
Formation Times	5) Required Method of Placing Sealing Material
Formation Type:    Unconsolidated Formation   Bedeck	☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☐ Other (Explain)
Total Well Depth (ft.) 21 Casing Diameter (ins.) W/A	5) Sealing Materials For monitoring wells and
(From groundsurface)	Neat Cement Grout monitoring well boreholes only
Coin D 4 (6) 1//2	Sand-Cement (Concrete) Grout
Casing Depth (ft.) NA	☐ Concrete ☐ Bentonite Pellets ☐ Clay-Sand Slurry ☐ Granular Bentonite
Was Well Annular Space Grouted? Yes No Unknown If Yes, To What Depth? Feet	Bentonite-Sand Slurry Bentonite - Cement Frout Chipped Bentonite
Sealing Material Used	From (Ft.) To (Ft.) No. Yards, Sacks Sealant or Volume Mix Ratio or Mud Weight
BENTOMITE Hole plug	Swize 2/
Comments:	
Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY  Date Received/Inspected District/County
SIGNED GROWTH ABJ	Daily College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College College
Sterifax And 5/27/93	Reviewer/Inspector
Steeph Rouse Drive Telephore Number (414) 238-1998	Falls N
SUITE E (917) 238 -1878  Tity, Sizie, Zip Code	Follow-up Necessary

MEQUON

### WELL/DRILLHOLE/BOREHOLE ABANDONMENT Form 3300-5W 11-89

	on back.				
1) GENERAL INFORMATION	(2) FACILITY NAME				
Well/Drillhole/Borehole Location RO-5 MINAUKEE	Original Well Owner (If Known)				
<u>NE</u> 1/4 of <u>SW</u> 1/4 of Sec. <u>36</u> ; T. <u>8</u> N. R. <u>≥1</u>					
(II abblicable)	Street or Route				
Grid Location Grid Number	City, State, Zip Code				
ft.   N   S.,ft.   E.   W					
Civil Town Name  MINAUKEE	Facility Well No. and/or Name (If Applicable) WI Unique Well				
Street Address of Well	Reason For Abandonment				
3709 WEST VILLARD AYENVE	Soil TEST Boring				
	Date of Abandonment				
MILWAUKEE	3-30 -93				
ELL/DRILLHOLE/BOREHOLE INFORMATION	(4) Depth to Water (Feet) NO WATER FROUNT ERED				
Original Well/Drillhole/Borehole Construction Completed On  (Date) 3-30-93					
(Date) 3 30 - 93	Pump & Piping Removed? Yes No X Not Appli Liner(s) Removed? Yes No X Not Appli				
Monitoring Well   Construction Report Available?	Screen Removed? Yes No Not Appli				
□ Water Well □ Yes □ No	Casing Left in Place? Yes No				
Drillhole Soil Profile Log	If No, Explain				
<b>⊠</b> Borehole	W. O. i. G. O''D. I. G. C. D. T. V. T. V.				
	Was Casing Cut Off Below Surface? Yes No Did Sealing Material Rise to Surface? Yes No				
Construction Type:  [X] Drilled	Did Material Settle After 24 Hours? Yes No				
Other (Specify)	If Yes, Was Hole Retopped? Yes No				
	(5) Required Method of Placing Sealing Material				
Formation Type:	Conductor Pipe-Gravity Conductor Pipe-Pumped				
☐ Unconsolidated Formation ☐ Bedack	Dump Bailer Other (Explain)				
Total Well Depth (ft.) 21 Casing Diameter (ins.) N/A	(5) Sealing Materials For monitoring wells and				
(From groundsurface)	Neat Cement Grout monitoring well boreholes				
Casing Depth (ft.) <u>NA</u>	Sand-Cement (Concrete) Grout				
Casing Depth (ft.) <u>N/A</u>	Clay-Sand Slurry Granular Bentonite				
Was Well Annular Space Grouted? Yes No Unknown	Bentonite-Sand Slurry Bentonite - Cement 9:				
If Yes, To What Depth? Feet	Chipped Bentonite				
Sealing Material Used	From (Ft.) To (Ft.) Sacks Sealant Mix Ratio or Mud Weight or Volume				
BENTONITE HOLE Plug	Surface 21				
Cinamic More Prog					
Comments:					
V	(10) FOR DVR OR COLVEY YOU ONLY				
Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY  Date Received/Inspected District/County (1997)				
STEPHEN G REDICE AEST	Description Districtions				
Mala 121/93	Reviewer/Inspector				
Steer Route Telephore Number					
SUITE E (414) 234-1998	Follow-up Necessary				
SUITE E	1 Opp Maching				

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. dmin. Code, whichever is applicable. Also, see instructions on back.

(I) GENERAL INFORMATION	(2) FACILITY NAME
Well/Drillhole/Borehole County	Original Well Owner (If Known)
Location RO-6 MILMAUKEE	
[7]	Present Well Owner
$\frac{NE}{\text{(If applicable)}} 1/4 \text{ of } \frac{SW}{1/4} \text{ of } \text{Sec.} \frac{36}{36} : \text{T.} \frac{8}{8} \text{ N. R.} \frac{31}{10} \text{ N. R.}$	
7/2 1/4 of 3/1 1/4 of 3a. 30 ; 1. 0 ; 1. 0 ; 1.	Street or Route
	Street of Route
Gov't Lot Grid Number	
Grid Location	City, State, Zip Code
ft.	I
Civil Town Name	Facility Well No. and/or Name (II Applicable) WI Unique Well No.
MILWAUKEE	Ro-6
Street Address of Well	Reason For Abandonment
3709 WEST VILLARD AYENVE	Soil TEST Boring
	Date of Abandonment
MILWAUKEE	3-30 -93
ELL/DRILLHOLE/BOREHOLE INFORMATION	
Original Well/Drillhole/Borehole Construction Completed On	(4) Depth to Water (Feet) NO WATER ENCOUNT ERED
2 70 07	Pump & Piping Removed? Yes No Not Applicable
(Date) $3^{-}30^{-}93^{-}$	1 * ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '
Monitoring Well   Construction Report Available?	I M Tott appearate
	M noraphaeoic
☐ Water Well	
Drillhole Soil Profile Log	If No, Explain
<b>⊠</b> Borehole	W 0 : 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
· ·	Was Casing Cut Off Below Surface? Yes No
Construction Type:	Did Sealing Material Rise to Surface? Yes No
Drilled Driven (Sancpoint) Dug	Did Material Settle After 24 Hours? Yes No
Other (Specify)	If Yes, Was Hole Retopped? Yes No
	(5) Required Method of Placing Sealing Material
Formation Type:	
☐ Unconsolidated Formation ☐ Betack	Conductor Pipe-Gravity Conductor Pipe-Pumped
	Dump Bailer Other (Explain)
Total Well Depth (ft.) 2 Casing Diameter (ins.) N/A	(6) Sealing Materials For monitoring wells and
-(From groundsurface)	Neat Cement Grout monitoring well boreholes only
,	Sand-Cernent (Concrete) Grout
Casing Depth (ft.) NA	Concrete Bentonite Pellets
·	Clay-Sand Slurry Granular Bentonite
Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown	Bentonite-Sand Slurry Bentonite - Cement Grout
If Yes, To What Depth? Feet	Chipped Bentonite
<u> </u>	No. Yards, T
Sealing Material Used	From (Ft.) To (Ft.) Sacks Sezlant Mix Ratio or Mud Weight
	or Volume
	Surface 3
BENTOMITE HOLE Plug	3412
ĺ	
Comments:	
Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
STEPHEN & REDXER, AESI	Data Received Inspected District County
Total Pysosy Poing Work - Date Signed /	
1/21/6/X Anh 5/27/93	Reviewer/Inspector
Street Route Telephore Number	
1 = CX CCUTVE VIVE	Follow-up Necessary
ty. Sizie, Zip Code (979) 238 -1898	1 Circles Cap , received y
MEQUON WI 53082	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(I) GENERAL INFORMATION	(2) FACILITY NAME									
Well/Drillhole, Borehole County Location RO-7 MINAUKEE	Original Well Outlet (If Known)									
<u>NE</u> 1/4 of <u>SW</u> 1/4 of Sec. <u>36</u> : T. 8 N. R. <u>≥1</u> N. W.										
(If applicable)  Gov't Lot Grid Number	Street or Route									
Grid Locationft.	City, State, Zip Code									
Civil Town Name MINAUKEE	Facility Well No. and/or Name (II Applicable) WI Unique Well No.									
Street Address of Well	Reason For Abandonment Soil TEST Boring									
3709 WEST VILLARD AYENVE  City, Village  MILWAUKEE	Date of Abandonment									
'ELL'DRILLHOLE/BOREHOLE INFORMATION										
Original Well/Drillhole/Borehole Construction Completed On	(4) Depth to Water (Feet) NO WASTER ENCOUNT ELED									
(Date)     4-1-93	Pump & Piping Removed? Yes No X Not Applicable Liner(s) Removed? Yes No X Not Applicable									
Monitoring Well Construction Report Available?	Screen Removed? Yes No Not Applicable									
☐ Water Well ☐ Drillhole ☐ Soil Profile Log	Casing Left in Place? Yes No									
⊠ Borehole	Was Casing Cut Off Below Surface? Yes No									
Construction Type:	Was Casing Cut Off Below Surface? Yes No Did Sealing Material Rise to Surface? Yes No									
☐ Drilled ☐ Driven (Sancpoint) ☐ Dug ☐ Other (Specify)	Did Material Settle After 24 Hours? Yes No If Yes, Was Hole Retopped? Yes No									
	(5) Required Method of Placing Sealing Material									
Formation Type:    Unconsolidated Formation   Bedeck	☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☐ Other (Explain)									
	(5) Sealing Materials For monitoring wells and									
(From groundsurface)	☐ Neat Cement Grout monitoring well boreholes only ☐ Sand-Cement (Concrete) Grout.									
Casing Depth (ft.) <u>NA</u>	Concrete   Bentonite Pellets									
Was Well Annular Space Grouted? Yes No Unknown If Yes, To What Depth? Feet	☐ Clay-Sand Slurry ☐ Bentonite-Sand Slurry ☐ Bentonite - Cement Grout ☐ Chipped Bentonite									
Sealing Material Used	From (Ft.) To (Ft.) No. Yards, Sacks Sealant or Volume Mix Ratio or Mud Weight									
BENTONITE HOLE Plug	Surface 2)									
	.4									
Comments:										
Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY									
STEPHEN & REDNER, AEST	Date Received/Inspected Annual District/County									
District Propertying Work Date Sized 2/93	Reviewer/Inspector									
Steepler Route  Steepler Route  (414) 224-1998	No the a character and									
SUITE E (414) 238-1898	Follow-up Necessary									
77.7										

#### State of Wisconsin Department of Natural Resources

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

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(1	) GENERAL INFORMATION			ILITY NAMI									
_	Well/Drillhole/Borehole	County	Ong	nal Well Out	er (If Known)								
	Well/Drillhole/Borehole Location RO-8	MILNAUKEE	- [										
_		-	Prese	ni Well Owne	ī								
	NE 1/4 of SW 1/4 of Sec. 3	<u>6: T. 8 N. R. 21                                    </u>											
	(If applicable)		Street	or Route		<del></del>							
	Gov't Lot	Grid Number	1										
	Grid Location Gov 1 Loc	- Chartanea	Cirv	State, Zip Co	vde .								
	Gnd Location	6 CT F CT W	1	June, Zip Co	,,,,,								
_	ft. N. S., Civil Town Name	ft. 🗌 E. 📗 W.		wall No.	nd/or Name (II A								
	Civil Iown Name		1 2 2 1	y WELL 140. Z.	,	pplicable) WI Unique Well No.							
	MILWAUKEE		<del></del>		RO-8								
	Street Address of Well	_	Reason For Abandonment										
	3709 WEST VILLA	ED AYENVE		oil TE	ST Bor	ing							
			Date o	f Abandonme	nt .								
	MILWAUKEE		4-1-93										
·	ELL/DRILLHOLE/BOREHOLE	INFORMATION											
5	Original Well/Drillhole/Borehole Co	onstruction Completed On	(4) Depth	to Water (Fee	t) NO UME	TE ETICUMT ERED							
-		1 -93	1	& Piping Ren		Yes No [X] Not Applicable							
	(Date) 4-	1 - 73		a riping Ken 3) Removed?	110 ven :								
			1		Ц	Yes No Not Applicable							
		Construction Report Available?	1	Removed?		Yes Not Applicable							
	☐ Water Well	🛛 Ye 🗆 No	1	Left in Place		Ye No							
	☐ Drillhole	Soil Profile Log	II No.	Explain									
	<b>☒</b> Borehole		l			<u> </u>							
			Was C	asing Cut Off	Below Surface?	☐ Yes ☐ No							
	Construction Type:		Did Se	aling Material	Rise to Surface?	Ye No							
	□ Driven (	Sanctroint) Dug	Did Ma	terial Settle A	fier 24 Hours?	∏ Y∝ ∏ №							
	Other (Specify)		If Ye	s, Was Hole F	Retopped?	Пү≃Пи							
			-										
	Formation Type:				Placing Sealing !								
	Unconsolidated Formation	☐ Bedrock	Conductor Pipe-Gravity Conductor Pipe-Pumped Dump Bailer Other (Explain)  (5) Sealing Materials For monitoring wells and										
	·												
	Total Well Depth (ft.) 5 C	asing Diameter (ins.) N/A											
	(From groundsurface)		Neat Cement Grout monitoring well boreholes only										
	,		. =	d-Cement (Co									
	Casing Depth (ft.) NA				, 2,	Bentonite Pellets							
	Casa.g Deper (ic) 14/7	·		☐ Concrete ☐ Bentonite Pellets ☐ Granular Bentonite									
	WW-W A	O V. ON O Halmour		conice-Sand S		Bentonite - Cement Grout							
	Was Well Annular Space Grouted?	Yes No Unknown			-	Remonne - Cement Atom							
	If Yes, To What Depth?	Feet	KI CW.	ped Bentonit		·							
	C 3: 34 ·	331-3		- ·	No. Yards,	Mis Datis as Marine 13							
	Sealing Materia	u Used	From (Ft.)	To (Ft.)	Sacks Sealant or Volume	Mix Ratio or Mud Weight							
_			· ·		1								
	BENTAMITE Wale alige	,	Surface	5	1	1							
-	BENTONITE Hole plug	,		<del> </del>	<del> </del>								
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				<del> </del>	<b> </b>								
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	Comments:												
1													
)	Name of Person or Firm Doing Sealir	ng Work	(10)	FOR	DNR OR CO	OUNTY USE ONLY							
	STEPHEN CONT	R. AEBI	Daie	ReceivedIns		District/County							
-	Sign Prop Poing Work -	Date Signed /											
	Malle	5/27/93	Reviewer/Inspector										
/	Sieer Route	Telephorfe Number	We view et introduce and										
-	WELEX POSTUR DOVE	(414) 238-1898	E B N										
=	SUITE E	11.7.535-11/3	Follo	n na Necess	<b>-</b> Y								
-	City, State, Zip Code		<u> </u>										

All abandonment work shall be Momin. Code, whichever is app			ons of Cha	pters NR 111	, NR 112 or NR 141, Wis.						
(I) GENERAL INFORMATION	<del>7</del>	(2) FAC	ILITY NAMI	E							
Well/Drillhole/Borehole Location RO-8B	County MI/WAUKEE			er (II Known)							
NE 1/4 of SW 1/4 of Sec.	X E		nt Well Owne	ſ							
(If applicable)	<u> </u>		or Route								
Gov't Lot	Grid Number		× w. ×	· _ ·							
Grid Location ft. N. S.	,ft. [] E. [] W.		State, Zip Co								
Civil Town Name MINAUKEE		Facilit	y Well No. 21	nd/or Name (II A) -8B	pplicable) WI Unique Well No.						
Street Address of Well		Reaso	n For Abando								
3709 WEST VILLE	ARD AYENVE		OIL TE		ing						
City, Village MIWAUKEE		Date o	l Abandorime								
VELL/DRILLHOLE/BOREHOL		<u> </u>									
Original Well/Drillhole/Borehole		(4) Depth	to Water (Fee	I) NO VASE	TR ETICOUNT EPED						
(Date) 4—  Monitoring Well  Water Well  Drillhole  Borehole	-93  Construction Report Available?   X Yes   No   Soil Profile Log	Pump & Piping Removed?  Liner(s) Removed?  Screen Removed?  Casing Left in Place?  If No, Explain  Yes No Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Applicate Not Appl									
Construction Type:	(Sandpoint) Dug	Was Casing Cut Off Below Surface? Yes No Did Sealing Material Rise to Surface? Yes No Did Material Settle After 24 Hours? Yes No If Yes, Was Hole Retopped? Yes No  (5) Required Method of Placing Sealing Material Conductor Pipe-Gravity Conductor Pipe-Pumped Dump Bailer Other (Explain)  (6) Sealing Materials For monitoring wells and Neat Cement Grout monitoring well boreholes only									
Formation Type:  [X] Unconsolidated Formation  Total Well Depth (ft.) 2 (  (From groundsurface)	Bedrock Casing Diameter (ins.) <u>N/A</u>										
Casing Depth (ft.) <u>N/A</u>		Sand	I-Cement (Co trețe	ncrete) Grout	monitoring well boreholes only  Bentonite Pellets						
Was Well Annular Space Grower?  If Yes, To What Depth?	Yes No Unknown Feet	☐ Bent	-Sand Slurry onice-Sand Sl sped Bentonite	•	Granular Bentonite Bentonite - Cement Grout						
Sealing Mater	ial Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight						
BENTONITE Hole plu	g	Surface	21								
					. /						
Comments:											
Name of Person or Eigen Daine Sail	W1	(10)	FAR	DY'D OD CO	DINTY HER ONLY						
Name of Person or Firm Doing Seal  STEPHEN G ROYS  Sign For Sol Polyton Poing Work	Ing Work  R. AEST  Date Storied / 1	<u> </u>	FOR Received, Insp		DUNTY USE ONLY District/County						
Minda And	Telephore Number	Revie	wer/laspector								
SUITE E	(414) 238-1898	Follo	up Necessa	<b>'Y</b>							

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#### WELL/DRILLHOLE/BOREHOLE ABANDONMENT Form 3300-5W 11-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back. (2) FACILITY NAME (I) GENERAL INFORMATION Original Well Owner (If Known) Well/Drillhole/Borehole MILWAUKEE Location RO-9 Present Well Owner ΧE NE 1/4 of SW 1/4 of Sec. 36 : T. 8 N. R. 21 Пи Street or Route (If applicable) Grid Number City, State, Zip Code Grid Location ft. □ N □ S., ft. [] E. [] W. Facility Well No. and/or Name (If Applicable) Civil Town Name WI Unique Well No. R0-9 MILWAUKEE Street Address of Well Reason For Abandonment SOIL TEST 3209 Boring WEST Date of Abandonment City, Village MILWAUKEE ELL/DRILLHOLE/BOREHOLE INFORMATION Original Well/Drillhole/Borehole Construction Completed On (4) Depth to Water (Feet) NO WASER ETHOURT ERED Pump & Piping Removed? Yes No No Applicable (Date) Liner(s) Removed? Yes No Not Applicable Screen Removed? Construction Report Available? Yes No Not Applicable ☐ Monitoring Well Casing Left in Place? Yes D No ☐ Y¤ ☐ № ☐ Water Well If No. Explain Drillhole Soil Profile Log N Borehole Was Casing Cut Off Below Surface? No No Did Sealing Material Rise to Surface? ☐ Yes ☐ No Construction Type: ☐ Dug X Dalled Did Material Settle After 24 Hours? Driven (Sancpoint) If Yes, Was Hole Retopped? ☐ Y¤ ☐ No Other (Specify) (5) Required Method of Placing Sealing Material Formation Type: Conductor Pipe-Gravity Conductor Pipe-Pumped Unconsolidated Formation Bocock Dump Bailer Other (Explain) Total Well Depth (ft.) 21. Casing Diameter (ins.) N/n (5) Sealing Materials For monitoring wells and (From groundsurface) Neat Cement Grout monitoring well boreholes only Sand-Cement (Concrete) Grout Concrete Casing Depth (ft.) Bentonite Pellets Clay-Sand Slurry Granular Bentonite Was Well Annular Space Growed? Yes No Unknown Bentonice-Sand Slurry Bentonite - Cement Frout If Yes, To What Depth? Chipped Bentonite Feet No. Yards. Sacks Sealant or Volume Mix Ratio or Mud Weight Sealing Material Used From (Ft.) To (Ft.) Surface 21 BENTONITE Hole plug Comments: Name of Person or Firm Doing Sealing Work FOR DNR OR COUNTY USE ONLY Daz Razived Inspected District/County Keviewer/Inspector Telephorie Number (414) 238-1998 Follow-up Necessary

	ructions on back.
I) GENERAL INFORMATION	(2) FACILITY NAME
Well/Drillhole/Borehole County Location RO-10 MILMAUKEE	Original Well Owner (Il Known)
	Present Well Owner
NE 1/4 of SW 1/4 of Sec. 36; T. 8 N. R. 2	Street or Route
· · · · ·	Number
Grid Location	City, State, Zip Code
ft. N. S., ft. E	Facility Well No. and/or Name (If Applicable)   WI Unique Well No.
MILWAUKEE	RO-10
Street Address of Well	Reason For Abandonment
3709 WEST VILLARD AYENVE	SOIL TEST Boring Date of Abandoriment
City, Village MINWAUKEE	1 4-2 -93
ELL/DRILLHOLE/BOREHOLE INFORMATION	
Original Well/Drillhole, Borehole Construction Completed On	(4) Depth to Water (Feet) NO WASTR ENCOUNTERED
(Date) $4-2-93$	Pump & Piping Removed? Yes No Not Applicabl
Monitoring Well   Construction Report Availa	Д тотфрассы
☐ Water Well ☐ Yes ☐ No	Casing Left in Place? Yes No
Drillhole Soil Profile Log	If No, Explain
<b>⊠</b> Borehole	Was Casing Cut Off Below Surface? Yes No
Construction Type:	Did Sealing Material Rise to Surface? Yes No
☐ Driven (Sandpoint) ☐ Dug	Did Material Settle After 24 Hours? Yes No
Other (Specify)	If Yes, Was Hole Retopped? Yes No
Formation Type:	(5) Required Method of Placing Scaling Material
☐ Unconsolidated Formation ☐ Badack	Conductor Pipe-Gravity Conductor Pipe-Pumped  Dump Bailer Caplain
Total Well Depth (ft.) 21 Casing Diameter (ins.) N/A	
(From groundsurface)	Neat Cement Grout monitoring well boreholes onl
	Sand-Cement (Concrete) Grout
Casing Depth (ft.) <u>N/A</u>	Concrete Bentonite Pellets  Clay-S and Slurry Granular Bentonite
Was Well Annular Space Grouted?	Unknown Bentonice-Sand Slurry Bentonite - Cement Grout
If Yes, To What Depth?	Feet Chipped Bentonite
Sealing Material Used	From (Ft.) To (Ft.) Sacks Sealant or Volume Mix Ratio or Mud Weight
At nometically also	Surface 21
BENTONITE HOLE Plug	
<u> </u>	
×	
Comments:	
Name of Person or Firm Doing Sealing Work	(10) FOR DNR OR COUNTY USE ONLY
STEPHEN & ROXER AE32	
is fire of Percompoing Work Date Signed	
Street Route Telephore Number	Reviewer/Inspector
SUITE E (414) 238-189.	Follow-up Necessary
ity, State, Zip Code	

All abandonment work shall be performed in accordance with the Admin. Code, whichever is applicable. Also, see instructions of		ons of Chap	oters NR 111,	NR 112	or NR 14	1, Wis.				
(I) GENERAL INFORMATION	(2) FAC	ILITY NAME	<del></del> _							
Well/Drillhole, Borehole County Location CO - 11 MINNVEEE			ет (И Клочп)	··	<del></del>	<del> </del>				
	'	nt Well Owne	r			<u> </u>				
(If applicable)	1	or Route				<del></del>				
Gov't Lot Grid Number										
Grid Location	1 -	State, Zip Co	de							
ft. N. S., ft. E. W.		y Well No. 27	id/or Name (II A	policable)	WI Unique	Well No				
MILWAUKEE		R0-								
Street Address of Well		n For Abando				·				
3709 WEST VILLARD AYENVE City, Village		Abandonme		ng	<del></del>					
MILWAUKEE	Dan	4-	0 -							
VELL/DRILLHOLE/BOREHOLE INFORMATION										
Original Well/Drillhole/Borehole Construction Completed On	1	to Water (Fee	<del></del>							
(Date) $y-2-93$		& Piping Ren )Removed?			Not A					
Monitoring Well Construction Report Available?	1	Removed?	片	Y¤   10 Y¤   10	Not A	Applicable Applicable				
☐ Water Well	Casing	Left in Place	? │	Yes   No		тррисгою				
Drillhole Soil Profile Log	If No. 1	Explain								
Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole     Borehole	Was C	vina Cut Off	Below Surface?		e Clas	<del></del>				
Construction Type:	i	-	Rise to Surface?		s ∏No s ∏No					
Drilled Driven (Sancpoint) Dug	Did Material Settle After 24 Hours? Yes No									
Other (Specify)	If Ye	s, Was Hole F	letopped?	☐ Ye	s ∏ No					
Formation Type:	(5) Require	d Method of I	Placing Sealing N	1aterial	<del></del>	,				
☐ Bedock	. ==	ductor Pipe-G	· =	Conductor Pi						
Total Well Depth (ft.) 2   Casing Diameter (ins.) $\frac{N/A}{A}$	Dump Bailer Other (Explain)  (5) Sealing Materials For monitoring wells and									
(From groundsurface)	Neat Cement Grout monitoring well boreholes only									
		d-Cement (Co	ncrete) Grout	. <b></b>						
Casing Depth (ft.) WA	Con	crete /-Sand Slurry		☐ Bento		_				
Was Well Annular Space Grouted?   Yes   No   Unknown		cnie-Sard S1	שדע		lar Bentonite nite - Cemer					
If Yes, To What Depth? Feet		ped Bentonite	-							
Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix R21	io or Mud V	Veight				
BENTONITE HOLE Plug	Surface	21				· · · · · · · · · · · · · · · · · · ·				
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Name of Person or Firm Doing Sealing Work	(10)	FOR								
STEPHEN & ROXER AFBI	(10) FOR //2 ///2 Date Received Inspe									
Signature Policy Poing Work Date Signed	Reviewer/Inspector									
Steeple Route Telephone Number	Kevie	wai i makeenot				j				
SUITE E (414) 238-1998	Follo	w-טף Necessa								
Dity, State, Zip Code						- 1				

#### Procedures for Abandoning a Borehole

After all necessary soil and groundwater samples were collected at a given borehole, the temporary groundwater monitoring well was dismantled and the borehole was completely backfilled with bentonite and abandoned according to procedures outlined in Chapter NR 141.25 of the Wisconsin Administrative Code. A WDNR borehole abandonment form (Form 3300-5W) was completed for each soil boring and is included in this report.

#### **APPENDIX F**

CHAIN OF CUSTODY AND SAMPLE SECURITY DOCUMENTATION

$A \rightarrow \nabla$	ENT	

### CHAIN OF CUSTODY RECORD

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3040246 4/1		RUS-	73		2	X	X	X						
3040247 4//		RUS-	83-1	7	2	X	X	X	X					
3040248 4//		R05-	)	2	X	X	X							
3040249 4//		ROS -		2	X	X	X	X						
3040250 4//		ROS-	9B		12	X	X	X						
3040251 4/2		RUS-	10A		2	X	X	X	X					
3040252 1/2		RUS-	10 B		2	X	X	Х						
3040253 4/2		RUS			2	X	X	Χ	X					
3040254 4/2		ROS -			2	X	X	X						
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### CHAIN OF CUSTODY RECORD

PAGE 4 OF 2

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# APPENDIX G PID CALIBRATION DOCUMENTATION

ENVIRONMENTAL SERVICES, INC.

# PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: 37th L VILLARD	DATE: 3/29/93
SIGNATURE: Staff 2. Rute	TIME: 2:05 Ar.
AMBIENT TEMPERATURE: 25 /	
SAMPLE EQUILIBRATION TEMPERATURE:	
WEATHER CONDITIONS: FAIR	
HNU Model PI 101, Advent Environmental Services, Inc. number	is equivalent in response to
ERRATIC READINGS: NA	
REPAIRS OR CLEANING:	•
PROCEDURE FOR DAILY CALIBRATION  A. Battery check - Attach probe to unit. Turn function switch to BAT	
green region. If not, recharge the battery.	
B. Allow unit to operate on STANDBY until the unit has reached amb reading is obtained.	ient conditions or until a stable
C. Zero set - Instrument should be zeroed on site if possible. Turn Listen to make sure fan is operating. Set the zero point with the ZE	
D. Calibration - Attach calibration gas to end of probe extension. A obtain the necessary meter reading. If meter does not respond, or if adjusted, the unit must be serviced or cleaned.	•
The above calibration procedure is taken from Calibration Procedure	section 3.4 of the Instruction

Manual, Trace Gas Analyzer, HNU Model 101, December 1985.

ENVIRONMENTAL SERVICES, INC.

## PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: 32TH & VIWARD DATE: 3/30
SIGNATURE: Stylen 5 Sente TIME: 7:00 Am
AMBIENT TEMPERATURE: 33 F
SAMPLE EQUILIBRATION TEMPERATURE: 70° F
WEATHER CONDITIONS: FAIR
HNU Model PI 101, Advent Environmental Services, Inc. number 2 was calibrated with 10/ parts per million Isobutylene calibration gas which is equivalent in response to 5c parts per million benzene at a gain setting of 7.5 with a 2 electron volt (Ev) lamp.
ERRATIC READINGS: $\sqrt{//2}$
REPAIRS OR CLEANING: N/A
PROCEDURE FOR DAILY CALIBRATION CHECK
A. Battery check - Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
C. Zero set - Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.

The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction

Manual, Trace Gas Analyzer, HNU Model 101, December 1985.

ENVIRONMENTAL SERVICES, INC.

# PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: 37th L LIKEARD DATE: 4/1
SIGNATURE: Style D. Reut TIME: 7:10 An
AMBIENT TEMPERATURE: <u>-25 F</u>
SAMPLE EQUILIBRATION TEMPERATURE: 70%
WEATHER CONDITIONS: FAIR
HNU Model PI 101, Advent Environmental Services, Inc. number 2 was calibrated with
ERRATIC READINGS: $\sqrt{n}$
REPAIRS OR CLEANING: 1/h
PROCEDURE FOR DAILY CALIBRATION CHECK  A. Battery check - Attach probe to unit. Turn function switch to BATT. The needle should be in the green region. If not, recharge the battery.
B. Allow unit to operate on STANDBY until the unit has reached ambient conditions or until a stable reading is obtained.
C. Zero set - Instrument should be zeroed on site if possible. Turn function switch to STANDBY. Listen to make sure fan is operating. Set the zero point with the ZERO set control.
D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be adjusted, the unit must be serviced or cleaned.
The above calibration procedure is taken from Calibration Procedure, section 3.4 of the Instruction

Manual, Trace Gas Analyzer, HNU Model 101, December 1985.

# ADVENT

ENVIRONMENTAL SERVICES, INC.

# PHOTOIONIZATION DETECTOR CALIBRATION DOCUMENTATION

SITE NAME: 39TH AND VILLARD	DATE:	4/2/93
SITE NAME: 39TH AND VILLARS.  SIGNATURE: Staffe D. Seute.	TIME:	2.15 AM
AMBIENT TEMPERATURE: 30°F		
SAMPLE EQUILIBRATION TEMPERATURE:		
WEATHER CONDITIONS: FAIR	· .	
HNU Model PI 101, Advent Environmental Services, Inc. number	is equiv	 alent in response to
ERRATIC READINGS: $\sqrt{\Lambda}$	<del></del>	
REPAIRS OR CLEANING: N/h		
PROCEDURE FOR DAILY CALIBRATI	ON CH	ECK - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
A. Battery check - Attach probe to unit. Turn function switch to BAT green region. If not, recharge the battery.	T. The ne	eedle should be in the
B. Allow unit to operate on STANDBY until the unit has reached aml reading is obtained.	bient cond	litions or until a stable
C. Zero set - Instrument should be zeroed on site if possible. Turn	n function	switch to STANDBY.

The above calibration procedure is taken from Calibration Procedure, section 3.4, of the Instruction Manual, Trace Gas Analyzer, HNU Model 101, December 1985.

D. Calibration - Attach calibration gas to end of probe extension. Adjust SPAN control setting to obtain the necessary meter reading. If meter does not respond, or if the correct reading cannot be

Listen to make sure fan is operating. Set the zero point with the ZERO set control.

adjusted, the unit must be serviced or cleaned.

#### **APPENDIX H**

WDNR SOIL BORING LOG INFORMATION
FORM (4400-122), MONITORING WELL
CONSTRUCTION REPORT FORM (4400-113A),
AND MONITORING WELL DEVELOPMENT FORM (4400-113B)

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is form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Fendlies: Forfeit not less an \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to 15 144.09 and 162 (6, Wis. Stats.

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APPENDIX I

LOCATION OF DRUMMED AND STOCKPILED INVESTIGATIVE WASTE

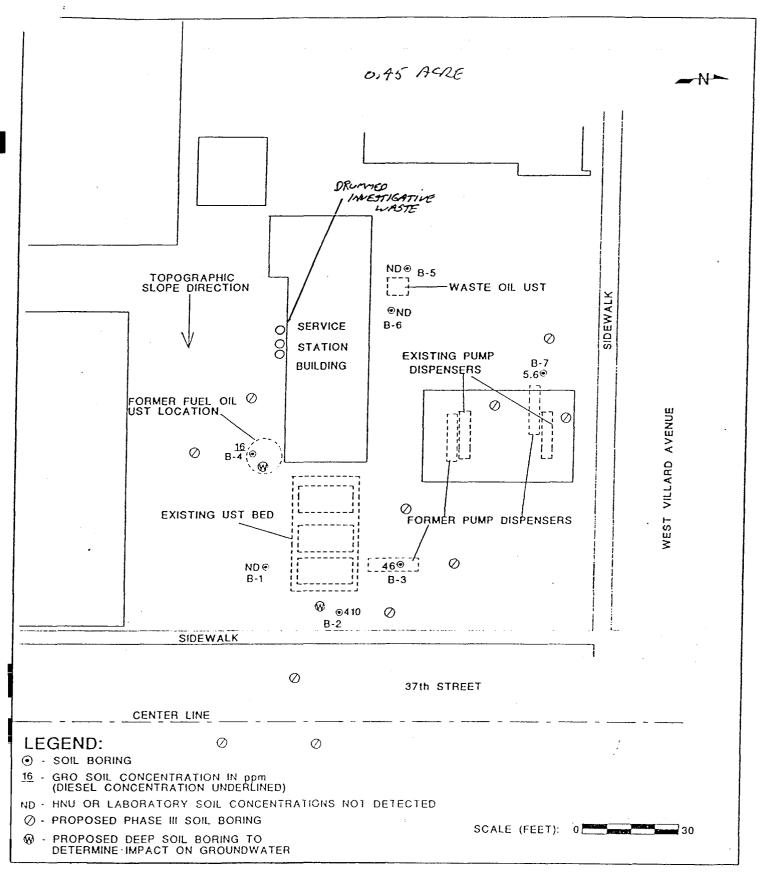


FIGURE 3 - SITE FEATURES 37th AND VILLARD MILWAUKEE, WISCONSIN ADVENT

ENVIRONMENTAL SERVICES, INC.

DATE: 8/10/92

DRAWING # 96804CB

APPENDIX J ANALYTICAL METHODS AND RESULTS

MILLER ENGINEERS & SCIENTISTS

COPY TO:

LETTER OF TRANSMITTAL

		5308 South				<u>.</u>							
-			n, WI 5308		DATE 8/5/93	JOB NO. 12265MZ70							
	(41	4) 458-6164 F	MA (414)	436-0309		tephen Reuter							
TO		nt Environmen		•		RE Test Results							
		W. Executive on, WI 53092	-	E		& Villard							
	wequ	ion, wr 55092	,			rent Job #96804							
					Adv	ent 100 #90804							
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1		8/5/93	1	Atterberg Limits I	Results (Sample #G	ΓS-1)							
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Brian J. Leibham

GRADATION ANALYSIS

CLIENT: Advent Environmental Services

JOB NO.: 12265M

PROJECT: 1993 Lab Testing

SPECIFICATION:

SOURCE: 37th & Villard

TESTED BY: BJL

TEST DATE: 08/05/93

SAMPLED BY: ADVENT

REVIEWED BY: KAL

SAMPLE NO: GTS-1

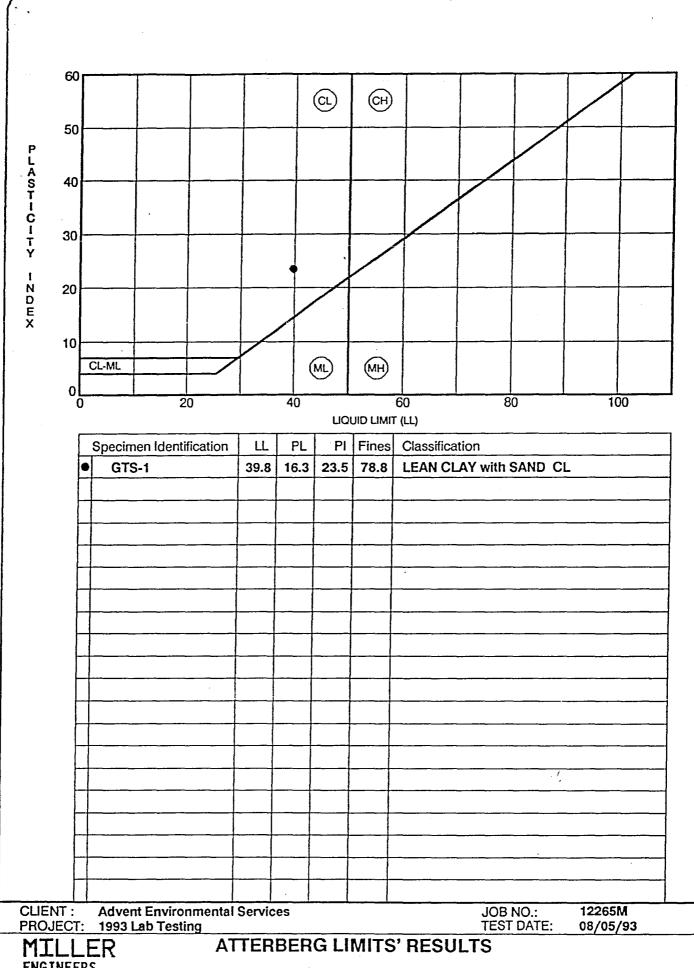
DEPTH OF SAMPLE:

TOTAL WEIGHT OF SAMPLE (9): 106.82

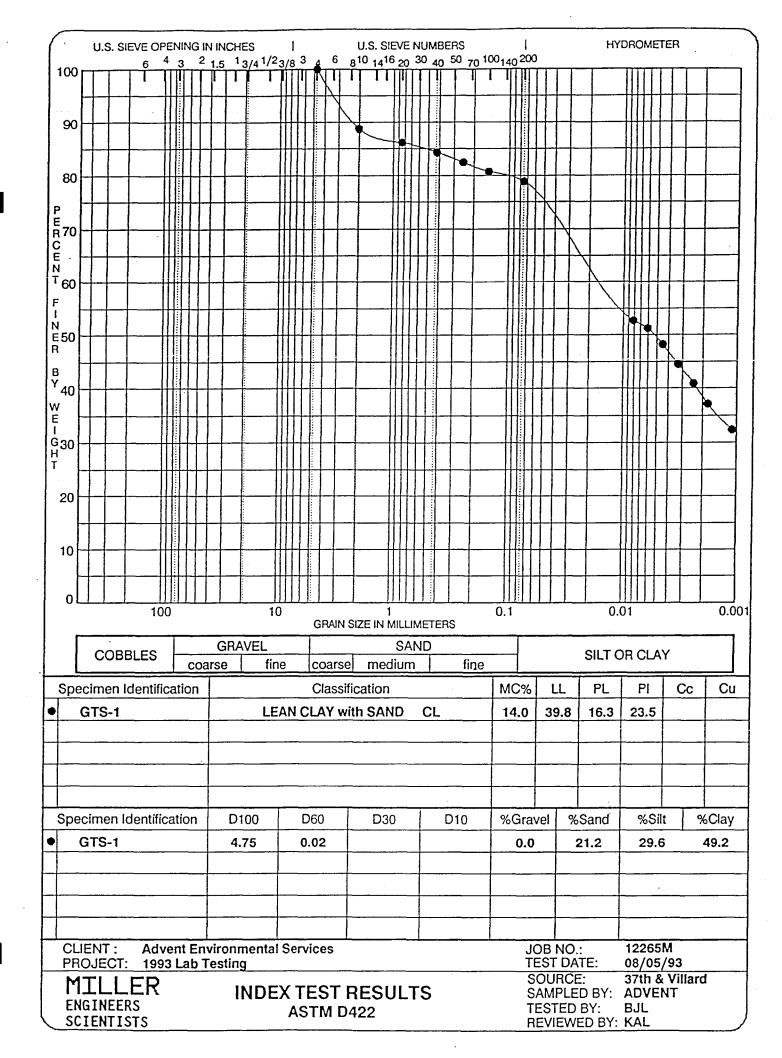
SIEVE TEST ANALYSIS (ASTM D422)

OTFUE # (i=)	%FINER	REQUIRE	D SPECS
SIEVE # (in)	>- THEK	MIN	MAX
3	100.0		
1.5	100.0		
1	100.0		
3/4	100.0		
.5	100.0		
3/8	100.0		
.25	100.0		
SIEVE #			
4	100.0		
8			
10	88.7		
16			,
20	86.1		<i>'</i> ,
30			
40	84.3		
50			
60	82.4		<u>,</u>
100	80.7		
200	78.8		

SCIENTISTS



ENGINEERS SCIENTISTS





Advent Environmental Services

6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID:

Sample Descript:

Analysis for:

96804, 37th & Villard

Soil **Percent Solids**

First Sample #: 304-0058

Sampled: Mar 29-30, 1993

Received:

Apr 1, 1993

Analyzed:

Apr 5-6, 1993

Reported: Apr 15, 1993

LABORATORY ANALYSIS FOR:

Percent Solids

Sample Number	Sample Description	Detection Limit %	Sample Result %	
304-0058	ROS-1A	0.10	81	
304-0059	ROS-1B	0.10	84	
304-0060	ROS-1C	0.10	84	
304-0061	ROS-2A	0.10	88	
304-0062	ROS-2B	0.10	81	
304-0063	ROS-3A	0.10	80	
304-0064	ROS-3B	0.10	87	
304-0065	ROS-4A	0.10	81	
304-0066	ROS-5A	0.10	86	
304-0068	ROS-5B	0.10	81	
304-0069	ROS-6A	0.10	82	

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director . 3040058.ADV <1>



Advent Environmental Services 6100 W. Executive, Suite E

6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID:

Sample Descript: Analysis for:

First Sample #:

96804, 37th & Villard

Soil

Percent Solids

304-0070

Sampled:

Mar 30, 1993

Received:

Apr 1, 1993

Analyzed:

Apr 5-6, 1993

Reported: Apr 15, 1993

LABORATORY ANALYSIS FOR:

Percent Solids

Sample Number	Sample Description	Detection Limit %	Sample Result %
304-0070	ROS-6B	0.10	80
304-0071	Fuel Oil (F.O.)	0.10	83

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <2>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: 96804, 37th & Villard

Sampled: Mar 29-30, 1993

Soil

Received:

Apr 1, 1993

Analysis for: First Sample #: **Total Lead** 304-0059

Analyzed: Reported:

Apr 9, 1993 Apr 15, 1993

LABORATORY ANALYSIS FOR: **Total Lead**

Sample Number	Sample Description	Detection Limit mg/kg Dry Weight	Sample Result mg/kg Dry Weight
304-0059	ROS-1B	0.30	13
304-0061	ROS-2A	0.28	20
304-0063	ROS-3A	0.31	20
304-0065	ROS-4A	0.31	20
304-0066	ROS-5A	0.29	16
304-0069	ROS-6A	0.30	20

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <3>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript:

96804, 37th & Villard

Soil: ROS-5A

Lab Number: 304-0066

Sampled:

Mar 30, 1993

Received: Extracted:

Apr 1, 1993 Apr 6, 1993

Analyzed: Reported:

Apr 8, 1993 Apr 15, 1993

LABORATORY ANALYSIS

Analyte Detection Limit Sample Results mg/L mg/L

TCLP Lead	0.0085
Flash Point, Open Cup(F)	>200
Paint Filter	Pass
Specific Gravity	2.0

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <4>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, Wi 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript:

Lab Number:

96804, 37th & Villard Soil: Fuel Oil (F.O.) Sampled: Received: N/A Apr 1, 1993

Extracted:

Apr 6, 1993

Analyzed: Reported: Apr 8, 1993 Apr 15, 1993

LABORATORY ANALYSIS

304-0071

Analyte	Detection Limit	Sample Results
	mg/L	mg/L ppm
TCLP Lead	0.005	0.013
TOLI Leau	***************************************	

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

3040058.ADV <5>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Matrix Descript:

96804, 37th & Villard

Soil

Analysis Method: First Sample #:

WDNR DRO

304-0058

Sampled: Mar 29-30, 1993

Received: Apr 1, 1993 Extracted: Apr 1, 1993

Analyzed: Apr 6, 1993 Reported: Apr 15, 1993

DIESEL RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	High B.P. Hydrocarbons mg/kg, Dry Weight (ppm)
304-0058	ROS-1A	6.2	N.D.
304-0059	ROS-1B	6.0	N.D.
304-0060	ROS-1C	6.0	N.D.
304-0061	ROS-2A	5.7	N.D.
304-0062	ROS-2B	6.2	N:D.
304-0063	ROS-3A	6.3	N.D.
304-0064	ROS-3B	5.7	N.D.

High Boiling Point Hydrocarbons is performed as described in Leaking Underground Storage Tank Analytical Guidance, Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <6>



Advent Environmental Services 6100 W. Executive, Suite E Meguon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Matrix Descript: 96804, 37th & Villard

Soil

Analysis Method: WDNR GRO First Sample #: 304-0065

Received: Analyzed: Mar 30, 1993 Apr 1, 1993

Reported:

Sampled:

Apr 9, 1993 Apr 15, 1993

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	Low/Medium B.P. Hydrocarbons mg/kg, Dry Weight (ppm)
304-0065	ROS-4A	1.2	2.7
304-0066	ROS-5A	78	190
304-0067	ROS-5A Duplicate	230	600
304-0068	ROS-5B	1.2	4.2
304-0069	ROS-6A	81	240
304-0070	ROS-6B	1.2	2.5

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance, Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <7>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID:

96804, 37th & Villard

Matrix Descript: Analysis Method: First Sample #: Water WDNR GRO 304-0072 Sampled: Received:

Mar 30, 1993 Apr 1, 1993

Analyzed: Reported: Apr 9, 1993 Apr 15, 1993

GASOLINE RANGE ORGANICS

Sample Number

Sample Description

Low/Medium B.P. Hydrocarbons

mg/L

(ppm)

304-0072

Methanol Blank

N.D.

Detection Limits:

1.0

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance, April 1992 WDNR SW 130 92 REV. Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <8>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092 Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-1A EPA 5030/8020 304-0058

Sampled: Received: Analyzed: Reported: Apr 15, 1993

Mar 29, 1993 Apr 1, 1993 Apr 9-13, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W	••	Sample Results µg/kg, Dry Weight
Benzene	2.5	•••••	N.D.
Ethyl Benzene	2.5		N.D.
Methyl-t-Butyl Ether	62	***************************************	N.D.
Toluene	2.5		N.D.
124 Trimethylbenzene	12		" N.D.
135 Trimethylbenzene	12	••••••	N.D.
Xylene	6.2		N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <9>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-1B EPA 5030/8020 304-0059

Sampled: Received: Analyzed: Mar 29, 1993 Apr 1, 1993

Apr 9-13, 1993 Reported: Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight		Sample Results µg/kg, Dry Weight	
Benzene	2.4	••••••	N.D.	
Ethyl Benzene	2.4	••••••	10	
Methyl-t-Butyl Ether	60	***************************************	N.D.	
Toluene	2.4	***************************************	N.D.	
124 Trimethylbenzene	12		N.D.	
135 Trimethylbenzene	12	***************************************	N.D.	
Xylene	6.0	••••••	N.D.	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV < 10 >



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-1C EPA 5030/8020 Sampled: Received: Analyzed: Mar 29, 1993 Apr 1, 1993 Apr 9-13, 1993

Attention: Stephen G. Reuter

Lab Number:

304-0060

Reported: Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim µg/kg , Dry W		Sample Results µg/kg, Dry Weight
Benzene	2.4	***************************************	N.D.
Ethyl Benzene	2.4		N.D.
Methyl-t-Butyl Ether	60	***************************************	N.D.
Toluene	2.4		5.6
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12		18
Xylene	6.0	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <11>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-2A EPA 5030/8020 Sampled: Received: Analyzed: Mar 29, 1993 Apr 1, 1993 Apr 9-13, 1993

Attention: Stephen G. Reuter

Lab Number:

304-0061

Reported: Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lin μ g/kg $^{\circ}$, Dry V		Sample Results µg/kg, Dry Weight
Benzene	2.3	••••••	N.D.
Ethyl Benzene	2.3		6.0
Methyl-t-Butyl Ether	57	***************************************	N.D.
Toluene	2.3		13
124 Trimethylbenzene	11	•••••	N.D.
135 Trimethylbenzene	11	•••••	N.D.
Xylene	5.7		. N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <12>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Stephen G. Reuter Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-2B EPA 5030/8020 304-0062 Sampled: Mar 29, 1993 Received: Apr 1, 1993 Analyzed: Apr 9-13, 1993 Reported: Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight		Sample Results µg/kg, Dry Weight
Benzene	2.5	***************************************	N.D.
Ethyl Benzene	2.5	******************************	7.8
Methyl-t-Butyl Ether	62	•	N.D.
Toluene	2.5		7.5
124 Trimethylbenzene	12	•••••	N.D.
135 Trimethylbenzene	12	***************************************	N.D.
Xylene	6.2	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <13>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-3A EPA 5030/8020 304-0063 Sampled: Mar 30, 1993 Received: Apr 1, 1993 Analyzed: Apr 9-13, 1993 Reported: Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight		Sample Results $\mu g/kg$, Dry Weight
Benzene	2.5	•••••	N.D.
Ethyl Benzene	2.5	***************************************	N.D.
Methyl-t-Butyl Ether	63	***************************************	N.D.
Toluene	2.5		2.6
124 Trimethylbenzene	13		N.D.
135 Trimethylbenzene	13	***************************************	N.D.
Xylene	6.3	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <14>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-3B EPA 5030/8020

Sampled: M Received: Analyzed: Ap

Mar 30, 1993 Apr 1, 1993 Apr 9-13, 1993

Attention: Stephen G. Reuter

Lab Number:

304-0064

Reported: A

Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μ g/kg , Dry Weight		Sample Results µg/kg, Dry Weight
Benzene	2.3	•••••	N.D.
Ethyl Benzene	2.3	•••••	N.D.
Methyl-t-Butyl Ether	58	***************************************	N.D.
Toluene	2.3		3.4
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	***************************************	· N.D.
Xylene	5.8	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYFICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <15>



Advent Environmental Services 6100 W. Executive, Suite E Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-4A EPA 5030/8020 Sampled: Mar 30, 1993 Received: Apr 1, 1993 Analyzed: Apr 9-13, 1993 Reported: Apr 15, 1993

Mequon, WI 53092 Attention: Stephen G. Reuter

Lab Number:

304-0065

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μg/kg , Dry Weight		Sample Results $\mu \mathrm{g/kg}$, Dry Weight
Benzene	2.5	***************************************	N.D.
Ethyl Benzene	2.5	***************************************	N.D.
Methyl-t-Butyl Ether	62	•••••	N.D.
Toluene	2.5		14
124 Trimethylbenzene	12	***************************************	20
135 Trimethylbenzene	12		N.D.
Xylene	6.2	••••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <16>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID:

Lab Number:

Sample Descript:
Analysis Method:

96804, 37th & Villard Soil: ROS-5A EPA-5030/8020

304-0066

Sampled: Received:

Mar 30, 1993 Apr 1, 1993

Analyzed: Reported: Apr 9-13, 1993 Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit	Sample Results
	μ g/kg , Dry Weight	μ g/kg, Dry Weight

Benzene	190	***************************************	370
Ethyl Benzene	190	••••••	4,900
Methyl-t-Butyl Ether	4,600	***************************************	N.D.
Toluene	190	***************************************	N.D.
124 Trimethylbenzene	930	***************************************	14,000
135 Trimethylbenzene	930	***********	4,000
Xylene	460	***************************************	7,900

And Andrews

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <17>



Advent Environmental Services 6100 W. Executive, Suite E Meguon, WI 53092 Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-5B EPA 5030/8020 Sampled: Received: Analyzed: Mar 30, 1993 Apr 1, 1993 Apr 9-13, 1993

Attention: Stephen G. Reuter

Lab Number:

304-0068

Reported: Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit $\mu g/kg$, Dry Weight		Sample Results µg/kg, Dry Weight
Benzene	2.5		N.D.
Ethyl Benzene	2.5	***************************************	17
Methyl-t-Butyl Ether	62		N.D.
Toluene	2.5	•••••	N.D.
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	***************************************	N.D.
Xylene	6.2	••••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <18>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Stephen G. Reuter

Xylene.....

Analyte

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-6A EPA 5030/8020 304-0069

Detection Limit

490

Sampled: Mar 30, 1993 Received: Analyzed:

Sample Results

15,000

Reported:

Apr 1, 1993 Apr 9-13, 1993 Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

	μg/kg , Dry Weight	μg/kg, Dry Weight
Benzene	200	430
Ethyl Benzene	200	4,300
Methyl-t-Butyl Ether	4,900	N.D.
Toluene	200	490
124 Trimethylbenzene	980	12,000
135 Trimethylbenzene	980	3,400

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <19>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092 Attention: Stephen G. Reuter Client Project ID: Sample Descript:

Lab Number:

96804, 37th & Villard Soil: ROS-6B Analysis Method: EPA 5030/8020 304-0070

Sampled: Received: Analyzed:

Reported:

Mar 30, 1993 Apr 1, 1993 Apr 9-13, 1993

Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit $\mu \mathrm{g/kg}$, Dry Weight		Sample Results $\mu \mathrm{g/kg}$, Dry Weight	
Benzene	2.5		N.D.	
Ethyl Benzene	2.5	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	11	
Methyl-t-Butyl Ether	63	***************************************	N.D.	
Toluene	2.5		7.1	
124 Trimethylbenzene	13	***************************************	N.D.	
135 Trimethylbenzene	13	***************************************	N.D.	
Xylene	6.3	***************************************	N.D.	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

Kevin W. Keeley Laboratory Director 3040058.ADV <20>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092 Attention: Stephen G. Reuter Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Liquid: Methanol Blank EPA 5030/8020 Sampled: Received: Analyzed: N/A Apr 1, 1993

Lab Number:

304-0072

Reported:

Apr 10, 1993 Apr 15, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit µg/L		Sample Results µg/L
Benzene	2.0		N.D.
Ethyl Benzene	2.0	***************************************	N.D.
Methyl-T-Butyl Ether	50	***************************************	N.D.
Toluene	2.0	***************************************	N.D.
124 Trimethylbenzene	10		N.D.
135 Trimethylbenzene			N.D.
Xylene	5.0		N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <21>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method: Lab Number: 96804, 37th & Villard Soil: ROS-5A EPA 8080 304-0066 Sampled: Mar 30, 1993 Received: Apr 1, 1993 Extracted: Apr 2, 1993 Analyzed: Apr 6, 1993

Reported: Apr 15, 1993

POLYCHLORINATED BIPHENYLS (EPA 8080)

Analyte	Detection Limit μg/kg, Dry Weight	Sample Results µg/kg, Dry Weight
PCB 1016	60	N.D.
PCB 1221	60	N.D.
PCB 1232	60	N.D.
PCB 1242	60	N.D.
PCB 1248	60	N.D.
PCB 1254	60	N.D.
PCB 1260	60	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <22>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: Fuel Oil (F.O.)

EPA 8080 304-0071 Sampled: Received: N/A Apr 1, 1993 Apr 2, 1993

Extracted: Analyzed:

Apr 2, 1993 Apr 7, 1993

Reported: Apr 15, 1993

POLYCHLORINATED BIPHENYLS (EPA 8080)

Analyte	Detection Limit μg/kg, Dry Weight		Sample Results µg/kg, Dry Weight
PCB 1016	95		N.D.
PCB 1221	95	***************************************	N.D.
PCB 1232	95	***************************************	N.D.
PCB 1242	95	***************************************	N.D.
PCB 1248	95	***************************************	N.D.
PCB 1254	95	***************************************	N.D.
PCB 1260	95	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040058.ADV <23>



Advent Environmental Services

6100 W. Executive, Suite E

Mequon, WI 53092 Attention: Stephen G. Reuter

Client Project ID: Sample Descript:

Analysis for:

96804, 37th & Villard Soil

TCLP Benzene by 8240

First Sample #: 304-0066 Sampled: Mar 30, 1993

Received: Apr 1, 1993

Analyzed: Apr 14, 1993 Reported: Apr 15, 1993

LABORATORY ANALYSIS FOR:

TCLP Benzene by 8240

Sample Number	Sample Description	Detection Limit mg/L	Sample Result mg/L
304-0066	ROS-5A	0.40	N.D.
304-0071	Fuel Oil (F.O.)	0.40	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

Kevin W. Keeley Laboratory Director 3040058.ADV <24>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript:

Analysis for:

LABORATORY ANALYSIS FOR:

96804, 37th & Villard

Percent Solids

Soil

Percent Solids

First Sample #: 304-0245 Sampled:

Apr 1-2, 1993

Received: Apr 5, 1993

Analyzed:

Apr 6-7, 1993

Reported: Apr 16, 1993

Sample Sample Sample Number Description **Detection Limit** Result % % 0.10 84 304-0245 ROS-7A 0.10 81 304-0246 ROS-7B 0.10 87 304-0247 ROS-8B-A 0.10 79 304-0248 ROS-8B-B 82 0.10 304-0249 ROS-9A 0.10 81

0.10

0.10

0.10

0.10

0.10

84

80

80

80

83

evin W. Keelev Laboratory Director

304-0250

304-0251

304-0252

304-0253

304-0254

304-0256

ROS-9B

ROS-10A

ROS-10B

ROS-11A

ROS-11B

Stockpile

3040245.ADV < 1 >



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript:

96804, 37th & Villard

Soil

Analysis for: First Sample #: 304-0245

Total Lead

Sampled:

Apr 1-2, 1993

Received:

Apr 5, 1993

Analyzed:

Apr 9, 1993

Reported:

Apr 16, 1993

LABORATORY ANALYSIS FOR:

Total Lead

Sample Number	Sample Description	Detection Limit mg/kg Dry Weight	Sample Result mg/kg Dry Weight
304-0245	ROS-7A	0.30	24
304-0247	ROS-8B-A	0.29	23
304-0249	ROS-9A	0.30	18
304-0251	ROS-10A	0.30	19
304-0253	ROS-11A	0.31	26

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director

3040245.ADV <2>

Advent Environmental Services 6100 W. Executive, Suite E

Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Matrix Descript: 96804, 37th & Villard

t: Soil

Analysis Method: WDNR GRO First Sample #: 304-0245

Sampled: Received: Apr 1-2, 1993 Apr 5, 1993

Analyzed:

Apr 5, 1993 Apr 12, 1993

Reported: Apr 16, 1993

GASOLINE RANGE ORGANICS

Sample Number	Sample Description	Detection Limit mg/kg, Dry Weight (ppm)	Low/Medium B.P. Hydrocarbons mg/kg, Dry Weight (ppm)
304-0245	ROS-7A	,	190
304-0246	ROS-7B	1.2	1.7
304-0247	ROS-8B-A	4.6	7.4
304-0248	ROS-8B-B	1.3	2.2
304-0249	ROS-9A	1.2	N.D.
304-0250	ROS-9B	1.2	N.D.
304-0251	ROS-10A	1.2	N.D.
304-0252	ROS-10B	1.3	3.8
304-0253	ROS-11A	1.3	5.3
304-0254	ROS-11B	1.3	N.D.

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance, Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040245.ADV <3>



Advent Environmental Services 6100 W. Executive, Suite E

Meguon, WI 53092

Attention: Stephen G. Reuter

Client Project ID:

96804, 37th & Villard

Matrix Descript:

Analysis Method: First Sample #:

Soil **WDNR GRO**

304-0255

Sampled:

Apr 1-2, 1993 Apr 5, 1993

Received: Analyzed: Apr 12, 1993

Reported: Apr 16, 1993

GASOLINE RANGE ORGANICS

Sample Number

Sample Description Low/Medium B.P. **Hydrocarbons**

mg/kg, Dry Weight

(ppm)

304-0255

ROS-8B-B Duplicate

N.D.

304-0256

Stockpile

3.9

Detection Limits:

1.2

Low to Medium Boiling Point Hydrocarbons is performed as described in Leaking Undergound Storage Tank Analytical Guidance, April 1992 WDNR SW 130 92 REV. Analytes reported as N.D. were not present above the stated limit of detection.

Kevin4V. Keeley Laboratory Director

3040245.ADV <4>



Advent Environmental Services 6100 W. Executive, Suite E Meguon, WI 53092

Client Project ID: Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-7A

Sampled: Received: Analyzed: Apr 13, 1993

Apr 1, 1993 Apr 5, 1993

Attention: Stephen G. Reuter

Lab Number:

EPA 5030/8020 304-0245

Reported: Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit $\mu \mathrm{g}/\mathrm{kg}$, Dry Weigh	t	Sample Results µg/kg, Dry Weight
Benzene	96 .		200
Ethyl Benzene	96 .		620
Methyl-t-Butyl Ether	2,400		N.D.
Toluene	96 .		120
124 Trimethylbenzene	480 ,		8,300
135 Trimethylbenzene	480		1,400
Xylene	240 .		3,100

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040245.ADV <5>



Sampled:

Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-7B EPA 5030/8020 304-0246

Received: Apr 5, 1993 Analyzed: Apr 13, 1993 Reported: Apr 16, 1993

Apr 1, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit µg/kg , Dry Weight	Sample Results µg/kg, Dry Weight
Benzene	2.4	N.D.
Ethyl Benzene	2.4	
Methyl-t-Butyl Ether	60	N.D.
Toluene	2.4	9,3
124 Trimethylbenzene	12	
135 Trimethylbenzene	12 ,	23
Xylene	6.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040245.ADV <6>



Advent Environmental Services 6100 W. Executive, Suite E

Mequon, Wi 53092 Attention: Stephen G. Reuter Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-8B-A EPA 5030/8020 304-0247 Sampled: Received: Analyzed:

Reported:

Apr 1, 1993 Apr 5, 1993 Apr 13, 1993

Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit $\mu \mathrm{g}/\mathrm{kg}$, Dry We	ight	Sample Results µg/kg, Dry Weight
Benzene	4.6	••••••	N.D.
Ethyl Benzene	4.6		11
Methyl-t-Butyl Ether	120		N.D.
Toluene	4.6		14
124 Trimethylbenzene	23		26
135 Trimethylbenzene	23		., 34
Xylene	12		N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kovin W. Keeley Laboratory Director 3040245.ADV <7>



Advent Environmental Services 6100 W. Executive, Suite E Meguon, W. 53092

Mequon, WI 53092 Attention: Stephen G. Reuter Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-8B-B EPA 5030/8020 304-0248 Sampled: Received: Analyzed: Apr 1, 1993 Apr 5, 1993

Analyzed: Apr 13, 1993 Reported: Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μg/kg , Dry W		Sample Results μg/kg, Dry Weight
Benzene	2.6		N.D.
Ethyl Benzene	2.6	•••••	12
Methyl-t-Butyl Ether	65	•••••••	N.D.
Toluene	2.6		6.5
124 Trimethylbenzene	13	***************************************	25
135 Trimethylbenzene	13	***************************************	15
Xylene	6.5	•••••	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040245.ADV <8>



Reported:

Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-9A EPA 5030/8020 304-0249 Sampled: Apr 1, 1993 Received: Apr 5, 1993 Analyzed: Apr 13, 1993

Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit $\mu \mathrm{g/kg}$, Dry Weight		Sample Results µg/kg, Dry Weight	
Benzene	2.4	••••••	N.D.	
Ethyl Benzene	2.4	***************************************	N.D.	
Methyl-t-Butyl Ether	60		N.D.	
Toluene	2.4		9,6	
124 Trimethylbenzene	12		N.D.	
135 Trimethylbenzene	12		N.D.	
Xylene	6.0	•••••	N.D.	

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040245.ADV <9>



Advent Environmental Services 6100 W. Executive, Suite E Meguon, WI 53092

Mequon, WI 53092 Attention: Stephen G. Reuter Client Project ID: Sample Descript:

Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-9B

EPA 5030/8020 304-0250 Sampled: Received: Analyzed:

Apr 1, 1993 Apr 5, 1993

Reported: Apr 16

Apr 13, 1993 Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W		Sample Results µg/kg, Dry Weight
Benzene	2.4	•••••	N.D.
Ethyl Benzene	2.4	***************************************	N.D.
Methyl-t-Butyl Ether	60		N.D.
Toluene	2.4	*************************	11
124 Trimethylbenzene	12	***************************************	N.D.
135 Trimethylbenzene	12	•••••	N.D.
Xylene	6.0		7.5

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevin W. Keeley Laboratory Director 3040245.ADV < 10 >



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-10A EPA 5030/8020 304-0251 Sampled: Received: Analyzed: Apr 2, 1993 Apr 5, 1993

Reported:

Apr 13, 1993 Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit μ g/kg , Dry Weight		Sample Results µg/kg, Dry Weight
Benzene	2.4	••••••	N.D.
Ethyl Benzene	2.4	***************************************	N.D.
Methyl-t-Butyl Ether	60		N.D.
Toluene	2.4		8.0
124 Trimethylbenzene	12		N.D.
135 Trimethylbenzene	12		N.D.
Xylene	6.0		N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Kevir W. Keeley Laboratory Director 3040245.ADV <11>



Advent Environmental Services 6100 W. Executive, Suite E Meguon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-10B EPA 5030/8020 304-0252 Sampled: Received: Analyzed: Apr 2, 1993 Apr 5, 1993

Reported:

Apr 13, 1993 Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Lim μ g/kg , Dry W		Sample Results µg/kg, Dry Weight
Benzene	2.6	•••••	N.D.
Ethyl Benzene	2.6	***************************************	15
Methyl-t-Butyl Ether	65		N.D.
Toluene	2.6		N.D.
124 Trimethylbenzene	13		16
135 Trimethylbenzene	13		N.D.
Xylene	6.5	***************************************	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Keyin W. Keeley Laboratory Director 3040245.ADV <12>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

rvices Client Project ID: E Sample Descript: Analysis Method: 96804, 37th & Villard Soil: ROS-11A EPA 5030/8020 Sampled: Apr 2, 1993 Received: Apr 5, 1993 Analyzed: Apr 13, 1993

Attention: Stephen G. Reuter

Lab Number:

304-0253

Reported: Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Limit µg/kg , Dry Weight	Sample Results µg/kg, Dry Weight
Benzene	100	190
Ethyl Benzene		1,400
Methyl-t-Butyl Ether	2,500	N.D.
Toluene	100	120

 Ethyl Benzene
 100
 1,400

 Methyl-t-Butyl Ether
 2,500
 N.D.

 Toluene
 100
 120

 124 Trimethylbenzene
 500
 4,900

 135 Trimethylbenzene
 500
 N.D.

 Xylene
 250
 1,600

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICATE

Kevin W. Keeley Laboratory Director 3040245.ADV <13>



Advent Environmental Services 6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

Client Project ID: Sample Descript: Analysis Method:

Lab Number:

96804, 37th & Villard Soil: ROS-11B EPA 5030/8020 304-0254 Sampled: Apr 2, 1993 Received: Apr 5, 1993 Analyzed: Apr 13, 1993

Reported: Ar

Apr 16, 1993

PETROLEUM VOLATILE ORGANIC COMPOUNDS (EPA 8020)

Analyte	Detection Linup μ g/kg , Dry V		Sample Results µg/kg, Dry Weight		
Benzene	2.6	••••••	N.D.		
Ethyl Benzene	2.6	•••••	18		
Methyl-t-Butyl Ether	65	***************************************	N.D.		
Toluene	2.6	***************************************	13		
124 Trimethylbenzene	13		25		
135 Trimethylbenzene	13	***************************************	N.D.		
Xylene	6.5	***************************************	N.D.		

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

GREAT LAKES ANALYTICAL

Keyin W. Keeley Laboratory Director 3040245.ADV <14>



Advent Environmental Services 6100 W. Executive, Suite E

Client Project ID: 96804, 37th & Villard

Mequon, WI 53092

Attention: Stephen G. Reuter

QC Sample Group: 3040245-254 & 256

Reported: May 3, 1993

QUALITY CONTROL DATA REPORT

ANALYTE		Percent	
	Lead	Solids	
Method:	3050/7421	160.3	
Analyst:	M. Shull	M. Nazeer	•
Reporting Units:	mg/kg	mg/kg	
Date Analyzed:	Apr 9, 1993	Apr 6, 1993	
QC Sample #:	BLK3040793	BLK3040693	
QO Gampie ".	BE10040730	<i>BE</i> 1100 10030	
Sample Conc.:	N.D.	N.D.	
Spike Conc.			
Added:	0.015	25	
Como Matric			
Conc. Matrix Spike:	0.017	25	
Spike.	0.017	25	
			·
Matrix Spike			
% Recovery:	113	100	
Conc. Matrix			
Spike Dup.:	0.016	25	
Spike Dup	0.010	25	
Matrix Spike			
Duplicate			,
% Recovery:	107	100	}
-			
Date! -			
Relative	6.0	0	
% Difference:	6.0	0	

Laboratory blank contained the following analytes: None Detected

GREAT LAKES AWALYTICAL

Keyn W. Keeley Laboratory Director % Recovery: Conc. of M.S. - Conc. of Sample x 100

Spike Conc. Added

Relative % Difference: Conc. of M.S. - Conc. of M.S.D.

(Conc. of M.S. + Conc. of M.S.D.) / 2

M.S. - Conc. of M.S.D. / 3

M.S. + Conc. of M.S.D. / 2

3040245.ADV < 15>



Advent Environmental Services

Client Project ID: 96804, 37th & Villard

6100 W. Executive, Suite E Mequon, WI 53092

Attention: Stephen G. Reuter

QC Sample Group: 3040245-256

Reported: May 3, 1993

QUALITY CONTROL DATA REPORT

ANALYTE

WGRO

Method:

8015

Analyst: Reporting Units:

D. Russell

Date Analyzed:

ng Apr 12, 1993

QC Sample #:

BLK3041293

Sample Conc.:

N.D.

Spike Conc.

Added:

2,000

Conc. Matrix

Spike:

1,900

Matrix Spike

% Recovery:

95

Conc. Matrix

Spike Dup.:

2,000

Matrix Spike Duplicate

% Recovery:

100

Relative % Difference:

5.1

Laboratory blank contained the following analytes: None Detected

GREAT LAKES ANALYTICAL

% Recovery:

Conc. of M.S. - Conc. of Sample

x 100

Spike Conc. Added

Relative % Difference:

Conc. of M.S. - Conc. of M.S.D.

x 100 3040245.ADV <16>

Kevin W/Keeley/ Laboratory Director (Conc. of M.S. + Conc. of M.S.D.) / 2



Advent Environmental Services

Client Project ID: 96804, 37th & Villard

6100 W. Executive, Suite E

Meguon, WI 53092

Attention: Stephen G. Reuter

QC Sample Group: 3040245-255

Reported: May 3, 1993

QUALITY CONTROL DATA REPORT

ANALYTE			Ethyl				 -	
	Benzene	Toluene	benzene	O-Xylene				
Method:	8020	8020	8020	8020				
Analyst:	D. Parikh	D. Parikh	D. Parikh	D. Parikh				
Reporting Units:	ng	ng	ng	ng				
Date Analyzed:	Apr 14, 1993	Apr 14, 1993	Apr 14, 1993					
QC Sample #:	BLK3041493	BLK3041493	BLK3041493	BLK3041493	4,			
				22.10011100				
Commis Ossas								
Sample Conc.:	N.D.	N.D.	N.D.	N.D.				
Spike Conc.								
Added:	50	50	50	50				
			•	30				
Conc. Matrix		·						
Spike:	56	55	54	55				
Matrix Spike								
% Recovery:	112	110	108	110				
•			100	110				
Conc. Matrix								
Spike Dup.:	55	55	55	55				
Matrix Spike		•						
Duplicate								
% Recovery:	110	110	110	110		/		
		110	110	110				
Relative								
% Difference:	1.8	0	1.8	0				

Laboratory blank contained the following analytes: None Detected

% Recovery:

Conc. of M.S. - Conc. of Sample Spike Conc. Added

x 100

Conc. of M.S. - Conc. of M.S.D.

3040245.ADV <17>

Kevin W. Keeley Laboratory Director Relative % Difference:

(Conc. of M.S. + Conc. of M.S.D.) / 2



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

George E., Secretary Box 12436 Milwaukee, Wisconsin 53212 TELEFAX NO. 414-961-2770

March 2, 1993

File Ref: 4440-3040
County: Milwaukee

Mr. Don Roettgers 5169 North 37th Street Milwaukee, WI 53209

Dear Mr. Roettgers:

3709 W. Villard

RE: Roettger's Oil Company - 5149 North 37th Street, Milwaukee, WI

Wisconsin Department of Natural Resources (WDNR) has been notified that petroleum contamination was discovered January 24, 1993 at the above referenced location. Based on the site specific information provided, this case has been assigned to the <u>Medium Priority Rank</u> group. The purpose of this letter is to inform you of your legal responsibilities to address this situation.

Releases from underground storage tanks regulated under Subtitle I of the Resource Conservation and Recovery Act require compliance with the provisions of 40 CFR Parts 280 and 281. The Environmental Protection Agency (EPA) has the authority to take enforcement action at any time, but will generally not take action against parties cooperating with the state. The WDNR proceeds in LUST cases under the authority of s. 144.76, Wisconsin Statutes, commonly referred to as Wisconsin's Hazardous Substance Spill Law. The definition of "hazardous substance" as found in s. 144.01(4m), Wisconsin Statutes, includes petroleum products.

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempted under sub.(9)."

Wisconsin Statute 144.76(3) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

Because you possess or control a hazardous substance which has been released to the environment, the Department identifies you as the party responsible for taking the actions necessary to restore the environment. You are required to:

- 1. Immediately notify the WDNR Spills Hotline at (414) 263-8491 should emergency conditions involving explosive vapors and/or well contamination develop.
- 2. Conduct an investigation to determine the extent of soil and groundwater contamination.
- 3. Remediate all of the environmental impacts caused by this situation.
- 4. Sample private water supply wells which may have been impacted by the release.

The Department suggests that you have a qualified environmental engineer or hydrogeologist direct the remedial investigation, assess the environmental impact, and coordinate the implementation of a cleanup program. Within 15 days of receiving this letter, you should provide the WDNR with the date the remedial investigation will begin.

The Department requires that the location of the tank and/or release be submitted with the work plan. Requirements for location are Latitude, Longitude, 1/4, 1/4, Township, and Range (east or west).

Final documentation of the investigation and cleanup should be prepared according to the guidance enclosed and sent to this office on completion of compliance with all applicable federal, state and local laws and regulations. Remedial actions must adequately cleanup contaminated soil and/or groundwater to current WDNR guidelines and/or standards. All product, soil, wastewater, and sludge must be disposed of in compliance with all applicable federal, state and local laws and regulations. Because the Department is experiencing a backlog of leaking underground storage tank cases of emergency status and your case is not currently ranked as an emergency, your submittals will be reviewed as time permits. Investigation and cleanup should not, however, be delayed pending WDNR review of your case.

The WDNR requests that concise LUST project updates be submitted every six months for all medium priority sites; biannual updates will enable WDNR project managers to monitor the status of remedial investigations and/or corrective actions on projects which are not under direct WDNR oversight.

You are encouraged to contact the Department of Industry, Labor, and Human Relations (DILHR), the state agency that administers the Petroleum Environmental Cleanup Fund (PECFA). This fund may reimburse you for eligible costs associated with the remedial investigation and cleanup. DILHR should be contacted at (608) 267-4545 to obtain current information regarding the PECFA program.

Please be aware that your ability to utilize PECFA funds will be dependent on your cooperation in adequately addressing this problem.

Sincerely,

Giselle Red

Program Assistant, Environmental Repair Section

Enclosures: Remedial Investigation Checklist

c: Advent Environmental SED Case File

241-17478-0

ADVENT

case tel

ENVIRONMENTAL SERVICES, INC.

January 14, 1993

no file

Mr. John Feeney 4041 N. Richards Avenue Milwaukee, WI 53212

Dear Mr. Feeney:

Enclosed is a letter-report of a Phase II environmental assessment that was conducted on an active Union 76 station located at 37th St. and Villard, Milwaukee, Wisconsin. The site is located in the NE 1/4, SW 1/4 of SEC 36, Township 8 North, Range 21 East.

The assessment was conducted as a prepurchase condition requested by an unnamed buyer. Upon notification of the results of this assessment, the present site owner requested that Advent Environmental Services, Inc. (AESI) notify the proper agencies. The present site owner is:

Roettgers' Oil Company 5149 N. 37th Street Milwaukee, WI 53209

The site contact is Mr. Don Roettgers (414) 466-0890.

Proposals and work plans are currently being drafted to conduct a Phase III investigation to determine the extent and characterize the contamination at this site. The objective of this investigation will be to collect sufficient data to design the most cost-effective remediation strategy.

If you have any questions, please call me at (414) 238-1998. Thank you.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Stephen G. Reuter Senior Hydrogeologist

SGR/man

cc: Mr. Don Roettgers

5149 N. 37th Street Milwaukee, WI 53209

ADVENT

ENVIRONMENTAL SERVICES, INC.

August 14, 1992

Mr. Scott Fleming Weiss, Berzowski, Brady, and Donahue 700 North Water Street Milwaukee, WI 53202-4273

Dear Mr. Fleming:

Subject:

37th and Villard Environmental Assessment

On July 7, 1992, Advent Environmental Services, Inc. (AESI) completed seven soil borings at depths ranging between 11 and 21 feet at the 37th and Villard site (see Figure 1). Soil samples were collected from the soil borings at locations selected by AESI personnel to determine the status of soils adjacent to three active gasoline underground storage tanks (USTs), one former 1,000-gallon fuel oil UST, one 500-gallon drain oil UST, three former pump islands, and two active pump islands (see Figure 2 for soil boring locations.) Soil sample collection and field screening procedures are included in Appendix A. Soil boring logs and soil descriptions are included in Appendix B. Copies of laboratory analytical data are included in Appendix C.

The field and laboratory results are summarized as follows:

- Boring B-1: B-1 was located approximately 8 feet south of the UST bed containing three active gasoline USTs. Boring B-1 was continuously sampled from the 5 to 21 foot depth interval. Field screening of soil samples with a photoionization detector (PID) did not reveal any readings above background levels (0 parts per million [ppm]). Laboratory analysis of soil sample BS-1 collected at the 19 to 21 foot depth interval did not reveal any GROs above the 5.0 mg/kg (ppm) laboratory detection limit.
- Boring B-2: B-2 was located approximately 6 feet east of the UST bed containing three active gasoline USTs. Boring B-2 was continuously sampled from the 5 to 21 foot depth interval. Field screening of soil samples with a PID revealed readings of 120, 25, and <1 ppm in the 5 to 7, 7 to 9, and 9 to 11 foot depth intervals, respectively. Laboratory analysis of soil sample BS-2 collected from the 5 to 7 foot depth interval revealed GROs at a concentration of 410 mg/kg (ppm).

- Boring B-3: B-3 was located approximately 12 feet north of the UST bed containing the three gasoline USTs and directly on the location of a former pump island. Boring B-3 was continuously sampled from the 3 to 21 foot depth interval. Field screening of soil samples with a PID revealed readings of 125, 40, and 2 ppm in the 3 to 5, 5 to 7, and 7 to 9 foot depth intervals, respectively. Laboratory analysis of soil sample BS-3 collected from the 3 to 5 foot depth interval revealed GROs at a concentration of 46 mg/kg (ppm).
- B-4 was located approximately 10 feet south of the southeast corner of the service station building near the location of the former fuel oil UST. Boring B-4 was continuously sampled from the 3 to 17 foot depth interval. Field screening of soil samples with a PID did not reveal any readings above background levels (0 ppm). Laboratory analysis of soil sample BS-4 collected in the 15 to 17 foot depth interval revealed a DRO concentration of 16 mg/kg (ppm).
- Boring B-5: Boring B-5 was located on the west side of the site and west of the existing waste oil UST. Boring B-5 was continuously sampled from the 3 to 15 foot depth interval. Field screening of soil samples with a PID did not reveal any readings above background levels (0 ppm). Laboratory analysis of soil sample BS-5 collected at the 11 to 13 foot depth interval did not reveal any total recoverable petroleum hydrocarbons (TRPHs) above the 5.0 laboratory detection limit.
- Boring B-6: B-6 was located on the west side of the site, east of the existing waste oil UST. Boring B-6 was continuously sampled from the 3 to 15 foot depth interval. Field screening of soil samples with a PID did not reveal readings above background levels (0 ppm). Laboratory analysis of soil sample BS-6 collected at the 9 to 11 foot depth interval did not reveal any TRPHs above the 5.0 laboratory detection limit.
- Boring B:7 was located west of the existing pump islands. Boring B-7 was continuously sampled from the 1 to 11 foot depth interval. Field screening with a PID did not reveal any readings above background levels (0 ppm). Laboratory analysis of soil sample BS-7 collected at the 9 to 11 foot depth interval revealed GROs at a concentration of 5.6 mg/kg (ppm).

Table 1 shows the results of laboratory analyses and field screening for each soil sample.

Table 1 Results of Laboratory Analyses and Field Screening						
Sample	Depth (feet)	PID Reading (ppm)	GROs (mg/kg)	DROs (mg/kg)	TRPHs (ppm)	
BS-1	19 - 21	0	ND	NA	NA	
BS-2	5 - 7	120	410	NA	NA	
BS-3	3 - 5	125	46	NA	NA	
BS-4	15 - 17	0	NA	16	NA	
BS-5	11 - 13	0	NA	NA	ND	
BS-6	9 - 11	0	NA	NA	ND	
BS-7	9 - 11	0	5.6	NA	NA	
Laboratory Detection Limits			5.0	5.0	5.0	

ND Not detected above laboratory detection limits

NA Not analyzed

Mr. Scott Fleming
Page Four

DISCUSSION

Based upon the results of laboratory analyses and field screening, petroleum-contaminated soil was identified in soil borings B-2 and B-3 near the three active gasoline USTs. The contamination was detected in the 5 to 11 foot depth interval and may also exist in the interval from 5 feet to the ground surface that was not field screened.

Petroleum contamination was also identified by laboratory analysis in boring B-4 near the former fuel oil UST location; no PID readings were observed in this boring. No indication of waste oil contamination was found near the waste oil UST in the areas investigated. No PID readings or TRPHs were detected in borings B-5 or B-6. Petroleum contamination was also identified by laboratory analysis in boring B-7 near a former and active pump dispenser; no PID readings were indicated in this boring.

RECOMMENDATIONS

AESI recommends that the owner of the site be informed of the petroleum contamination identified in order to comply with Wisconsin Statutes 144.76(2a) and 144.76(3).

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempted under sub. (9)."

Wisconsin Statute 144.76(3) states: "A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

AESI also recommends that additional soil borings and soil sampling be completed at the site according to Wisconsin Department of Natural Resources (WDNR) Leaking Underground Storage Tank (LUST) guidance to define the horizontal and vertical extent of contaminants identified.

If you have any questions or concerns, please do not hesitate to call at 238-1998.

Sincerely,

ADVENT ENVIRONMENTAL SERVICES, INC.

Mall S. Del

Randall S. Igel

Environmental Specialist

RI/man Enclosure

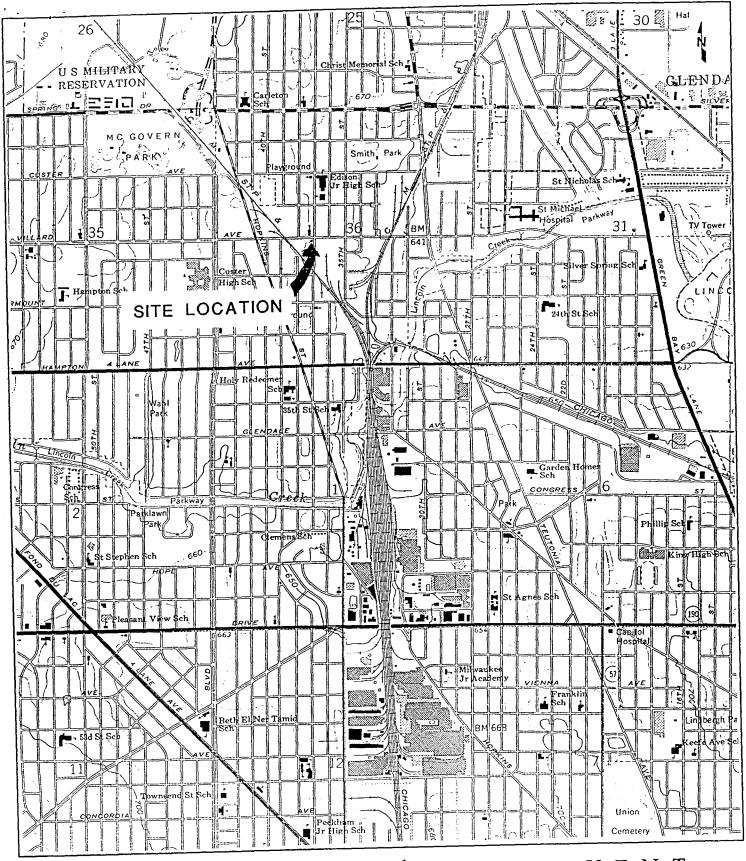


FIGURE 1 SITE LOCATION 37th AND VILLARD SITE MILWAUKEE, WISCONSIN



A D V E N T

ENVIRONMENTAL SERVICES, INC.

AESI # 96804

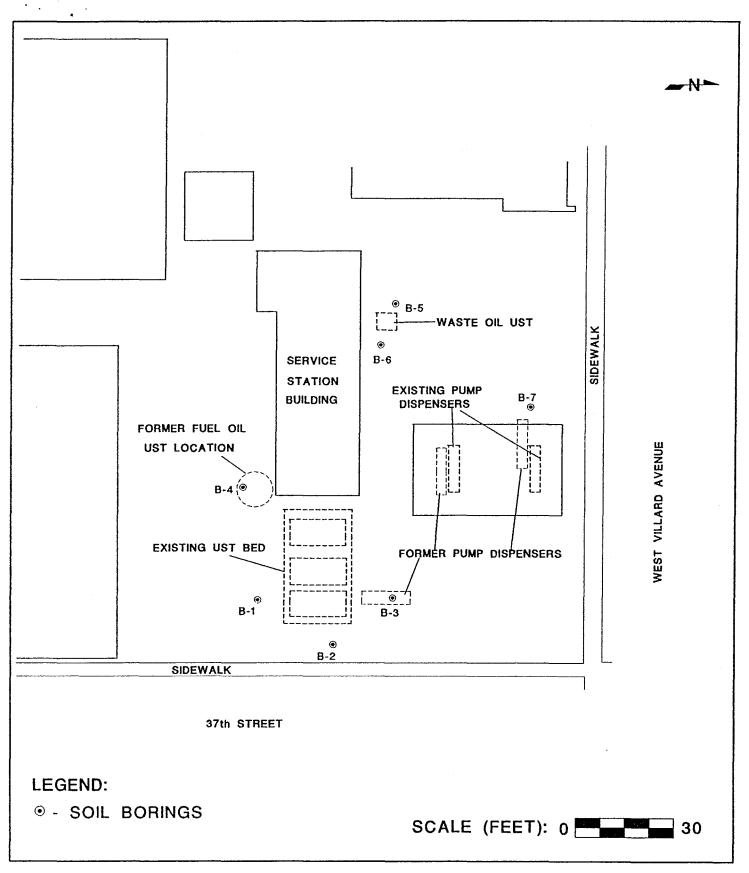


FIGURE 2 - SITE FEATURES 37th AND VILLARD MILWAUKEE, WISCONSIN ADVENT

ENVIRONMENTAL SERVICES, INC.

DATE: 8/10/92

DRAWING # 96804CA

SAMPLING AND FIELD SCREENING PROCEDURES

Introduction

This section outlines procedures followed for collecting soil samples, maintaining security and integrity of the samples, and procedures for abandoning a borehole.

Sampling Procedures

Soil Sampling Procedures

Soil samples were collected to determine if soil at the site was contaminated.

Subsurface soil samples were collected with a truck-mounted rotary drill equipped with a hollow stem auger and a two-inch diameter, 24-inch split spoon sampler. The split spoon sampler was advanced at two foot intervals by conventional methods, including the attachment of the sampler to an AW rod and standard 140 pound hammer. Adequate soil was collected and split into a sample for field screening and a sample for laboratory analysis.

All drilling tools and equipment were high-pressure steam cleaned prior to the start of sampling work. All sampling tools were also washed with an AlconoxTM and reagent water solution between sampling points to prevent cross contamination.

Field Screening Procedures

Samples obtained for field screening were analyzed by a PID using the headspace procedure. Immediately after the split spoon sample tube was opened, instrumental readings (PID levels in ppm) and sample descriptions/remarks were recorded on a soil profile log at the appropriate depth intervals. Results from this

screening survey were used to aid in the selection of samples for laboratory analysis. The PID calibration was checked daily with isobutylene gas and at appropriate time intervals in accordance with WDNR guidelines. The headspace procedure was conducted as follows:

- Headspace samples were collected in clean four-ounce glass jars for each site and were half-full with the sample material.
- The mouth of the headspace jar was then covered with heavy gauge aluminum foil and sealed with the lid of the jar.
- The sample was then agitated for at least 30 seconds to break soil clods and release headspace vapors.
- When ambient air temperatures were below 70°F, the headspace samples were placed in a warm environment out of direct sunlight and allowed to equilibrate to approximately 70°F. When ambient air temperatures were above 70°F samples were placed out of direct sunlight and allowed to equilibrate approximately 70°F.
- Following equilibration, the sample headspace was analyzed by inserting the
 tip of the PID probe through a single, small hole in the foil seal to a position
 half-way between the seal and sample surface and then recording the
 highest instrument readings (benzene equivalent ppm).
- New headspace jars were used for each site; however, used headspace jars
 on a site were cleaned with an AlconoxTM and water solution and allowed to

dry. If no VOC carryover was identified with a PID, the jars were reused; if VOC carryover was identified, the sample jars were discarded.

Soil Samples Submitted for Laboratory Analysis

Soil samples were submitted for laboratory analysis were collected as split samples from the same location as the samples for field screening. Soil samples submitted were transferred into the appropriate containers depending on the laboratory analysis needed.

ANALYTE	CONTAINER TYPE	FIELD PRESERVATIVE
GRO	60 ml vial	methanol
DRO	60 ml vial	none
Voc	4 oz. TLC jar	none
PVOC	4 oz. TLC jar	none
TRPH	4 oz. TLC jar	none
PAH	4 oz. TLC jar	none
PCB	4 oz. TLC jar	none
TOTAL LEAD	4 oz. TLC jar	none
TOTAL CADMIUM	4 oz. TLC jar	none
DISPOSAL PARAMETERS	4 oz. TLC jar	none

TLC = teflon lined cap

Samples were then sealed and cooled to 4°C for transport to the laboratory. All collected samples were labeled with the following information:

- Site Name
- Sample Number
- Sample Location
- Date and Time of Collection
- Analysis Requested
- Name of Sampler
- Other Applicable Information (ie. PID readings, odors)

Chain of Custody Procedures

A chain of custody record was fully completed in triplicate by the AESI sampler immediately following sample collection. The chain of custody record was kept with the samples during transport to the laboratory. When transferring sample custody the individuals relinquishing and receiving them signed, dated, and noted the time on the chain of custody record. A designated sample custodian accepted custody of the shipped samples and verified that the sample identification numbers matched those on the chain of custody record. A copy of the chain of custody record was then retained by the laboratory until analyses were completed. The record was then transferred to the site file with the analytical results.

Procedures for Abandoning a Borehole

After all necessary soil samples were collected at a given borehole, the borehole was completed backfilled with bentonite and abandoned according to procedures outlined in Chapter NR 141.25 of the Wisconsin Administrative Code.

A WDNR borehole abandonment form (Form 3300-5W) was completed for each soil boring and is included in this report.

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This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

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This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

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Precision Analytical Lab, Inc 205 West Galena Milwaukee, WI 53212

Phone: (414) 272-5222

Advent Environmental

P.O. Box 246

Port Washington, WI 53074

Attn:

Invoice Number:

Order #: 92-07-114

Date: 07/27/92 09:39

Work ID: 96804

Date Received: 07/08/92 Date Completed: 07/27/92

Client Code: ADVENT

SAMPLE IDENTIFICATION

Sample	Sample	Sample	Sample
Number	Description	Number	<u>Description</u>
01	BS-1	05	BS-5
02	BS-2	06	BS-6
03	BS-3	07	BS-7
04	BS-4		

Laboratory ID Number (Wisconsin DNR): 241369260

Jeff Bushner

Collected: 07/07/92 Sample: 01A BS-1 Test Description Result Limit <u>Units</u> <u>Analyzed</u> By Mod. GRO (WDNR) < 5.0 mg/kg 07/16/92 SEL Sample: 02A Collected: 07/07/92 BS-2 <u>Units</u> <u>Analyzed</u> Test Description Result <u>Limit</u> By 410 Mod. GRO (WDNR) mg/kg 07/16/92 Sample: 03A BS-3 Collected: 07/07/92 Test Description Result Limit Units Analyzed By Mod. GRO (WDNR) 46 mg/kg 07/22/92 SEL Sample: 04A BS-4 Collected: 07/07/92 Test Description Result Limit <u>Units</u> <u>Analyzed</u> By Mod. DRO (WDNR) 16 mg/kg 07/18/92 SEL Sample: 05A BS-5 Collected: 07/07/92 Test Description Result <u>Limit</u> Units Analyzed By < 5.0 ppm 07/14/92 CEP TRPH, Soil Collected: 07/07/92 Sample: 06A BS-6 Test Description Result Limit Units Analyzed By < 5.0 TRPH, Soil ppm 07/14/92 CEP Sample: 07A BS-7 Collected: 07/07/92 Test Description Result <u>Limit</u> <u>Units</u> <u>Analyzed</u> By Mod. GRO (WDNR) 5.6 mg/kg 07/16/92 SEL

The organic data is reported out on a dry-weight basis.

Sample was covered air tight in approved container, shipped in cooler from the source to our lab, temperature upon arrival was 4 degrees C.

The samples ordered for TRPH were analyzed by Modified EPA Method 9073.

The samples ordered for GRO were analyzed by the Wisconsin DNR Modified GRO method.

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Receipt pH _____

Receipt temp _____

(list additional on separate list and attach.)

LEAKING UNDERGROUND STORAGE TANK (Case Tracking) Form 4400-146 3-91

		550	3-91
Site Name: Roett gers	Sil Company	_ District:	County: 4
3169 N. 39M St	3709 W. Villard	Address:	
PMN:FID		-	
Proj Mgr. J. Feeney			
Support Person:			_1/4 Sec T R E/W
Date of Initial Contact: 1 1 24, 9	Date of Letter: 3		ure Approved: 9 / 20/ 94
Status 1 = State Lead 2 = RP Lead Priority Screening 1 = High 2 = Medium 3 = Low 4 = Unknown	Funding Source 1 = RP 2 = LTF 3 = EF 4 = SF 5 = None 6 = Other (Describe 7 = EPA (Emergence	Date Pl (mm/dd	Review Requested Yes No ECFA Request Received d/yy)// rust Eligible 1 = Federal 2 = Non-Federal
Score:	CASE	STATUS	
(√) As Appropriate No Action Taken (N)		Date Completed (mm/dd/yy)	Comments
	_//	_//	
Emergency Response (R)	_!	_//	
Field Investigation (I)	_11	_//	
Remedial Action (C)	_11	_//	
Long Term Monitoring (L)	_//	_11	
Fire/Explosion Threat (1) Contaminated Private Well (2) Contaminated Public Well (3) Groundwater Contamination (4) Soil Contamination (5) Other: (6)	mpacts (vi) Potential Impacts (Leaded C = 1) Unleaded is (2) Diesel (3) Fuel Oil =1 Unknown Hydrocart Other (8) Quantity Discharged	
Responsible party Don R	Poetligers	Consultant: Adven	+
Address: 5/69 N 3	37454	Address:	
Milwankee	53209	-	
Telephone: (list additional on separate list and attach.)		Telephone:	
	*	Amount Committed: S	·
		Amount Spent: S(list additional on separate list	and attach.)
01 = Inf. Contact, Resp Initiated 02 = RP Letter, Resp Initiated 03 = NTC of Non Compliance 04 = Inf. Enf. Conf. Resp Initiated 05 = Follow-up Enf. Conf. Resp Initiated 06 = Inspection Letter 07 = Response Received	08 = Adequate Response 09 = Progress Being Made 10 = Defer Enforcement 11 = Close Out	15 = Formal Enf Conf 16 = Enf Conf. Letter 17 = Admin. Order Proposed 18 = Admin. Order Final 19 = Admin. Order Modified 20 = Admin. Order Cancelle 21 = Contest Case Hearing	25 = Referral to EPA 26 = Continuing Violation
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LUST CASE PRIORITY SCREENING WORKSHEET

HIGH FACTORS: (DEFINITION: Any case which presents an actual the and property; and/or any case which has caused or has a high potential of the property; and/or any case which has caused or has a high potential of the property; and/or any case which has caused or has a high potential of the property; and/or any case which has caused or has a high potential of the property; and/or any case which presents an actual the property; and/or any case which presents an actual the property; and/or any case which has caused or has a high potential of the presents.	reat to human health, or has a high potential of causing a threat to human her causing substantial impacts to the soil waters and air of the State of Wiscons
Contaminated private or public well >NR140 enf. std. Explosive or toxic vapors in structures Threat of fire	HIGH OR MEDIUM FACTORS: (write in choice of high or medium) Floating product (medium if no receptors within 1 mile) Known gw contamination (private or public well <140 enf. std.) Impacted surface water - wetland, trout stream, etc. impacted Saturated soil contamination
MEDIUM FACTORS: (DEFINITION: Any case which does not appear shows levels of contamination that may cause substantial environmental in	to be an immediate threat to human health or vital natural resources but whic mpacts if left unaddressed.)
Moderate (e.g. 100 - 500 ppm TPH) soil contamination with moderate Impacted surface water no critical habitat threats.	te potential for impacting groundwater.
LOW FACTORS: DEFINITION: Any case where contamination has bee human health and vital natural resources.)	in documented, but which presents limited potential for any immediate threat
Soil contamination (e.g. less than 100 ppm TPH) which appears to h Initial remedial action has substantially reduced environmental threat	nave a limited potential for impacting groundwater.
UNKNOWN FACTOR: (DEFINITION: Any case where some indication the level of threat to human health or the environment can not be assessed	n of contamination is present, but due to incomplete or inaccurate information at this (time.)
Inadequate information to assign a high, medium, or low ranking.	·
OVERALL RANKING: The screening rank for the site along with the dat Special circumstances for a particular case may be taken into account in the the ranking of a site based upon "special circumstances."	te of ranking. This may be updated when additional information is received, a comment section. The District LUST coordinator may independently set
Circle one & date, indicate in priority screening box opposite side	HIGH MEDIUM LOW UN
Overall Site Comment:	
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, NUMERICAL LUST SCORING WORK	SHEET (Complete for LUST cases ranked HIGH)
1. GROUNDWATER & SOILS: (circle one)	
1. GROUNDWATER & SOILS: (circle one)	POINTS
1. GROUNDWATER & SOILS: (circle one) POINTS 20 Municipal Well 18 >5 private wells	POINTS 8 Soil & gw within 1200' of a public well 6 Soil & gw within 1200' of one or more private wells
1. GROUNDWATER & SOILS: (circle one) POINTS 20 Municipal Well 18 >5 private wells 16 4 - 6 private wells	POINTS 8 Soil & gw within 1200' of a public well 6 Soil & gw within 1200' of one or more private wells 4 GW contamination, no wells within 1200'
1. GROUNDWATER & SOILS: (circle one) POINTS 2) Municipal Well 18 >5 private wells 16 4 - 6 private wells 14 2 - 3 private wells 12 1 private well	POINTS 8 Soil & gw within 1200' of a public well 6 Soil & gw within 1200' of one or more private wells
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1. GROUNDWATER & SOILS: (circle one) POINTS 2. Municipal Well 18 >5 private wells 16 4 - 6 private wells 12 1 private wells 12 1 private well SCORE For purposes of this scoring, private well includes any non-municipal scoring. 2. EXPLOSIVE OR TOXIC VAPORS: (circle one) POINTS CONFIRMED POTENTIAL 20 10 Explosive levels in a residence of 8 Explosive levels in a residence of but NOTE: Explosive levels determ on OSHA permissible explosive levels determ on OSHA permissible explosive levels strategraphy (gravel, sand, fractured bedrock or util the ground surface. 16 Permeable strategraphy (gravel, sand, fractured bedrock or util the ground surface. 16 Permeable strategraphy and groundwater greater than 25 feet by Moderately permeable strategraphy (silty sands, silty gravel, of Moderately permeable strategraphy (silt, clayey silt, sand clays) and groundwater greater than 25 feet by Impermeable strategraphy (silt, clayey silt, sand clays) and groundwater greater than 25 feet by SCORE	POINTS 8 Soil & gw within 1200' of a public well 6 Soil & gw within 1200' of one or more private wells 4 GW contamination, no wells within 1200' 2 Soil contamination pal water supply system. or building intercepting and explosivity meter; toxicity levels are based exposure limits (PEL) lities capable of intercepting and directing flow) and groundwater within 25 feetlow ground surface. clayer sands) and groundwater within 25 feet of ground surface and 25 feet below ground surface. coundwater within 25 feet of ground surface. cut below ground surface.

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